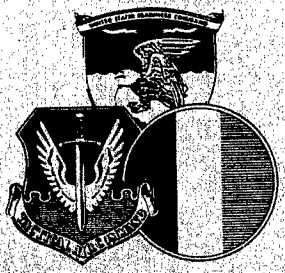
JOINT AIR ATTACK TEAM OPERATIONS



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This document:

Describes the capabilities and weapon systems of the attack helicopter team and the A-10 aircraft

Describes how attack helicopters, scout helicopters, and CAS aircraft are organizd to form a joint air attack team (JAAT)

Provides a description of JAAT operations, tactics, and employment techniques

Provides a training program, with options, for building an effective JAAT resource

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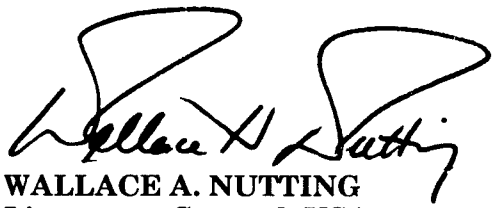
PURPOSE

This document describes joint air attack team (JAAT) tactics and the training for joint operations between US Air Force close air support (CAS) aircraft and US Army attack helicopters. The basic elements required to plan, form, and execute JAAT operations are outlined for commanders, leaders, and staff planners at all levels.

SCOPE

This document:

- Describes the capabilities and weapon systems of the attack helicopter team and the A-10 aircraft.
- Describes how attack helicopters, scout helicopters, and CAS aircraft are organized to form a JAAT.
- Provides a description of JAAT operations, tactics, and employment techniques.
- Provides a training program, with options, for building an effective JAAT resource.



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STATEMENT

The word "he" is intended to include both the masculine and feminine genders. Any exceptions to this will be as noted.

PREFACE

Modern land battles are fought and won by air and land forces working together.

Due to the technological advancement and sheer numbers of enemy weapon systems, the advantage of friendly ground combat superiority is being challenged. Thus, ground force commanders are relying on the integration of combat aviation assets to provide an effective combat multiplier. One such aviation asset capable of adding to the lethality of combined arms operations is the joint air attack team (JAAT). The JAAT is:

> A combination of US Army attack and scout helicopters and US Air Force close air support (CAS) aircraft (normally A-10s) operating together to attack high priority, lucrative targets.

The A-10 is the preferred fighter aircraft for JAAT operations because of its maneuverability, anti-armor capability, compatible radios, and the amount of time it can remain in the target area. Other tactical fighters such as the A-7, F-16, and F-4 may participate in a JAAT with modifications to their tactics and communication nets.

For ease of understanding, the A-10 is used as the close air support tactical fighter example throughout this manual.

The team action generated by the simultaneous application of Army and Air Force assets creates a combat multiplier capable of destroying enemy armor elements, disrupting enemy command and control, and providing the opportunity for friendly combat elements to seize the offensive initiative.

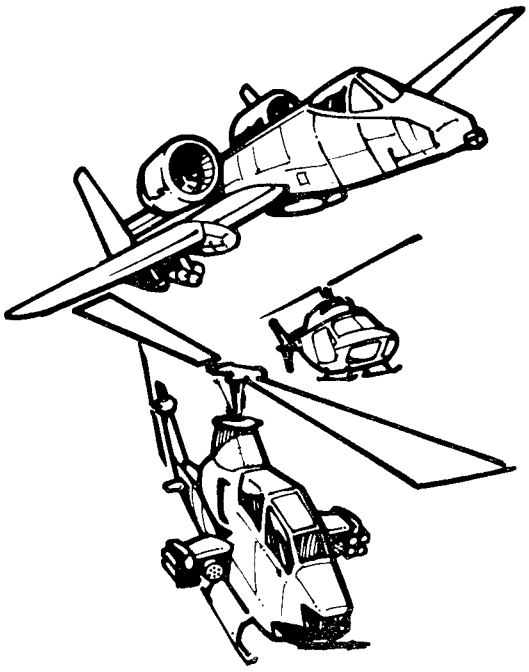
The key to a JAAT's effectiveness is the technical and tactical knowledge possessed by the ground force commander. This document presents the approved TAC, TRADOC, and USREDCOM JAAT operations concept and the basic principles for the formation and employment of a joint air attack team.

TABLE OF CONTENTS

**This manual supersedes TACP 50-20/TRADOC TT 17-50-3 dated 30 April 1979.*

CHAPTER 1

THE JOINT AIR ATTACK TEAM



The joint air attack team (JAAT) is a combination of US Army attack and scout helicopters and US Air Force close air support (CAS) aircraft. The JAAT may operate either as an integrated member of the combined arms team or it may operate independently away from ground units. Most of the time the team operates with Army ground maneuver forces of brigade or battalion size, field artillery, mortars, and air defense artillery weapon systems to attack high priority targets.

A JAAT IS USED AGAINST THE SAME TARGET ARRAY.

A JAAT is formed as attack helicopters and CAS aircraft enter the fight against the *same* target array. It is the responsibility of the ground maneuver commander, the air battle captain (ABC), the forward air controller (FAC), and the fire support coordination officer (FSCOORD) to continuously coordinate the use of attack helicopter teams, CAS aircraft, and indirect fires to effectively destroy the enemy.

The JAAT provides the ground maneuver commander with a highly mobile, lethal tank killing force which can engage the enemy beyond the range of ground antitank weapons. Because of their mobility, attack helicopters and CAS aircraft may be the first to engage the enemy. They can delay, disrupt, or destroy enemy formations, help stop enemy penetrations, and provide vital intelligence about enemy strengths and locations. The JAAT can also adjust indirect fires beyond the range of ground observed fires. This places continuous pressure on the enemy for a longer period of time.

A JAAT IS MOST EFFECTIVE AGAINST MOVING TARGETS.

The JAAT is most effective against a moving enemy, since these targets are easier to acquire. It is least effective when attacking camouflaged dug-in positions.

The JAAT can be employed during the conduct of offensive or defensive operations or used to counter enemy airmobile or airlanded insertions in friendly rear areas. A JAAT can be employed to accomplish specific tasks during the conduct of combined arms team operations:

OFFENSIVELY — The commander can best use the team against enemy counterattacks or in the exploitation or pursuit role.

DEFENSIVELY — The team can best be used to reinforce committed ground maneuver units or independently to attack enemy forces trying to flank friendly forces in the battle area.

CONSTANT COORDINATION IS A MUST.

The team's success depends on the proper sequencing of assets and coordination between the ABC, the Air Force flight lead, and the ground maneuver commander. This coordination is necessary since each element of the team retains its own system of command and control and executes according to proven individual service doctrine and tactics.

In describing how the JAAT fights, this document briefly discusses employment of US Army attack helicopter units and US Air Force close air support (CAS) aircraft. For specific details on actual attack helicopter operations refer to the How-to-Fight manuals: FM 17-47, *Air Cavalry Combat Brigade*; FM 17-50, *Attack Helicopter Operations*; or FM 17-95, *Cavalry*. Close air support tactics described in this document are those used by A-10 aircraft. For additional details on CAS operations, refer to TAC Manual 3-1, *Mission Employment Tactics*.

ATTACK HELICOPTERS AND CAS AIRCRAFT ARE MORE EFFECTIVE AND HAVE A BETTER CHANCE OF SURVIVAL IF EMPLOYED AGAINST THE TARGET ARRAY SIMULTANEOUSLY.

CHAPTER 2

THE ATTACK HELICOPTER TEAM

The attack helicopter team is a combination of US Army attack helicopters and scout helicopters led by an air battle captain (ABC). Both helicopter systems are ideally suited for situations where:

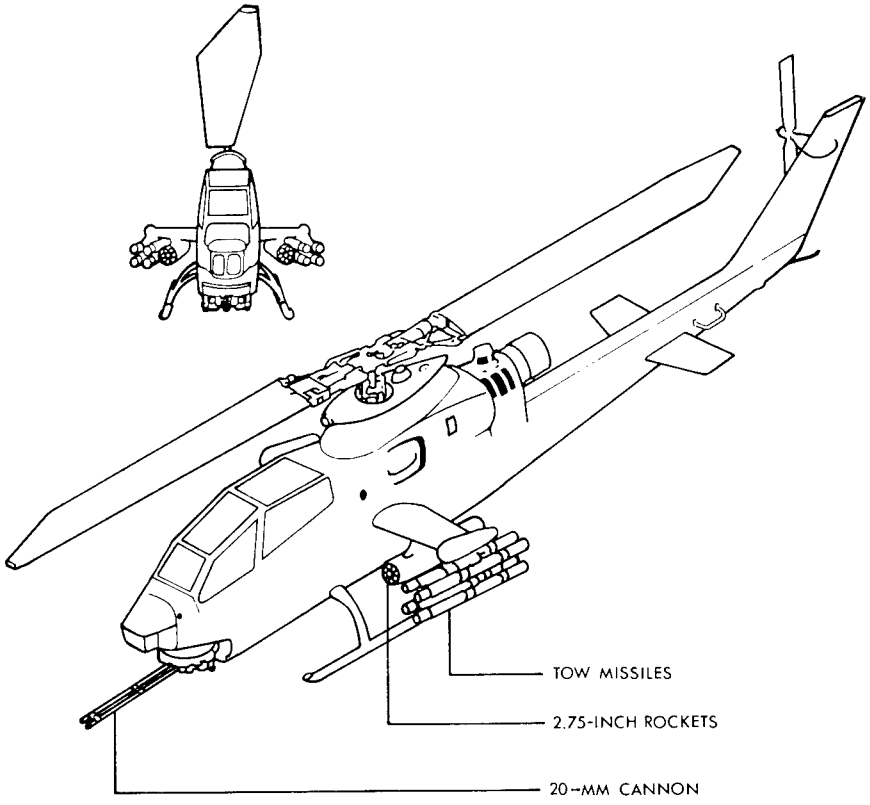
— rapid reaction is important,
— ground forces are inadequate,

OR

— ground forces are restricted by terrain.

CAPABILITIES

• ATTACK HELICOPTER (AH). The AH-1 is a tandem seat, two place helicopter armed with TOW missiles, 2.75-inch rockets, and a turret-mounted 20-mm cannon or a turret with a 7.62-mm mini-gun and 40-mm grenade launcher. Page 4 lists AH-1 weapons capabilities. The AH-1 has three radios: UHF, VHF, and FM.



AH-1 WEAPONS CAPABILITIES

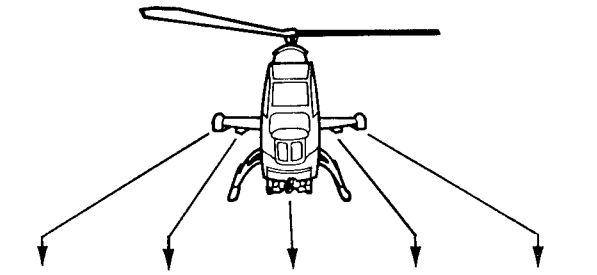
SUBSYSTEM	MAXIMUM EFFECTIVE RANGE	MAXIMUM LOAD*	TARGETS
2.75-inch (FFAR) (Folding Fin Aerial Rocket)	5,400 meters	76 (10-lb rockets) 62 (17-lb rockets)	Troops† Trucks or‡ lightly armored vehicles enemy air‡ defense
7.62-mm mini-gun	1,100 meters (Tracer burn-out 900 meters)	4,000	Troops† Trucks or‡ lightly armored vehicles
40-mm grenade launcher	1,600 meters	265	Troops† Trucks or‡ lightly armored vehicles
20-mm cannon (Armor-piercing incendiary round)	1,500 meters	750	Trucks or‡ lightly armored vehicles
**TOW (Tube-launched, optically tracked, wire-guided missile	3,750 meters	8 missiles	Tanks and‡ other hard targets

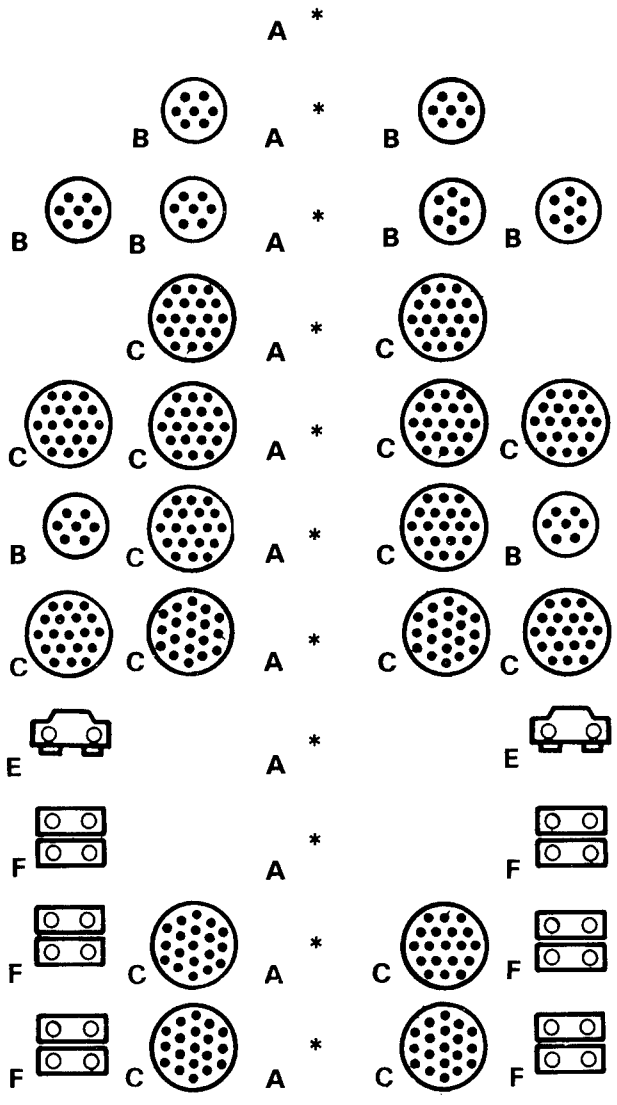
* The actual load depends on the mission, enemy situation, type attack helicopter, and atmospheric conditions.

** Minimum range of 500 meters. Time of flight for the missile at maximum range is 22 seconds (excluding unmasking and acquisition time).

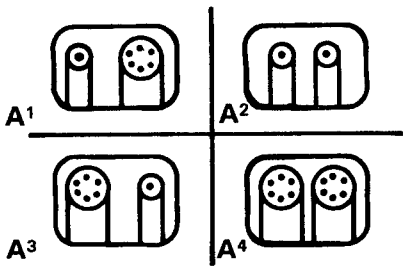
+ Area Targets
‡ Point Targets

ATTACK HELICOPTER WEAPONS CONFIGURATIONS

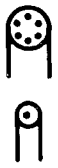




M28A1E1 SUBSYSTEMS



M28A1E1 turret subsystems are interchangeable and may be used in conjunction with all approved wing store configurations.



7.62-mm automatic gun

40-mm grenade launcher

A^1	M28A1E1	Left, 7.62-mm automatic gun; right, 40-mm grenade launcher
A^2	M28A1E1	Two 40-mm grenade launchers
A^3	M28A1E1	Right, 7.62-mm automatic gun; left, 40-mm grenade launcher
A^4	M28A1E1	Two 7.62-mm automatic guns
B	M157	Seven-tube 2.75-in rocket launcher
C	M159 or M200	19-tube 2.75-in rocket launcher
E	M118	Smoke grenade dispenser
F	TOW	Two or four TOW missiles
G	M35	20-mm automatic gun

The weapons mix on an AH-1 is determined by unit standing operating procedures (SOP) with consideration given to the type of mission assigned and the known or suspected enemy threat. Attack helicopter weapons configurations are shown on page 5. For more detailed information on the various weapon systems capabilities, see FM 17-40, *Helicopter Gunnery*.

- OBSERVATION HELICOPTER (OH). The OH-58 is a four place, light observation helicopter used in the aeroscout role. The normal crew consists of a pilot and an aerial observer, co-pilot, or a forward air controller (FAC). The OH-58 has four radios: UHF, VHF, and two FMs.

OH-58 LIGHT OBSERVATION HELICOPTER

EMPLOYMENT

Attack helicopter units are not usually attached below division due to the logistical support requirements. However, they may be placed under operational control (OPCON) of a brigade. A company is generally the smallest attack helicopter unit placed OPCON to a brigade.

Attack helicopters are integrated into the tactical plan of the ground maneuver commander. When used effectively, they add flexibility to the scheme of maneuver. The ground maneuver commander may assign the attack helicopter unit:

— a covering force mission.
— an economy-of-force mission on his flank.
— a rear area combat operation (RACO).
— an attack mission against the enemy follow-on forces.

OR

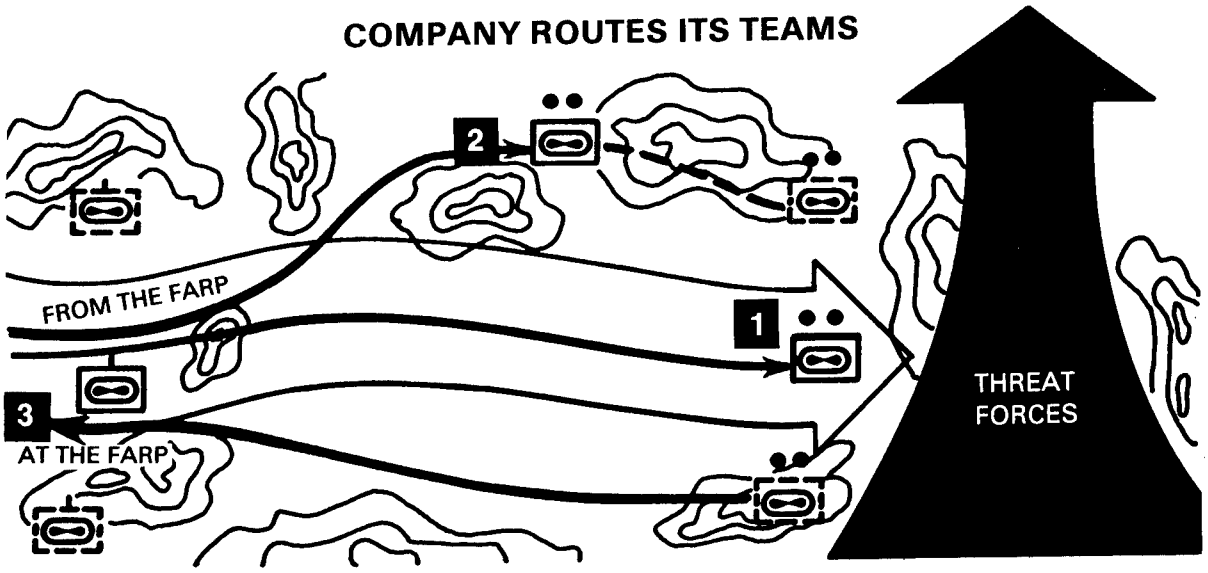
— He may order the attack helicopters to initiate or join the battle at the forward edge of the battle area/forward line of own troops (FEBA/FLOT).

ALTHOUGH THEY CANNOT HOLD TERRAIN LIKE GROUND MANEUVER FORCES, ATTACK HELICOPTERS CAN DOMINATE TERRAIN FOR LIMITED PERIODS OF TIME BY EMPLOYING DIRECT AERIAL FIRES AND OBSERVED INDIRECT FIRES.

In an economy-of-force mission, ground elements may supplement the attack helicopter unit. Under the team or task force concept, attack helicopter units may take operational control of ground maneuver units when task-organized to do so. They can also take control in severe cases where the ground unit is disintegrating under enemy pressure. This is done only long enough to free the remaining ground elements or until the ground maneuver unit can re-establish effective control.

To employ his unit, the attack helicopter commander must be able to regulate movement between forward arming and refueling points (FARP) and the operational area while insuring the movement of supplies to the FARP. To do this and to maintain continuous contact, he usually uses the *one-third option.* As *one* element is attacking, the *second* element is enroute to attack or enroute from attack to rearm and refuel. The *third* element is at the FARP. By rotating elements, one-third of the force can be kept on-station maintaining continuous pressure on the enemy. The on-station force updates the relieving force, thus insuring an effective relief on-station while maintaining contact with the enemy. For this reason, attack helicopter companies should fight as companies, *not* as separate platoons in battalion sectors.

COMPANY ROUTES ITS TEAMS

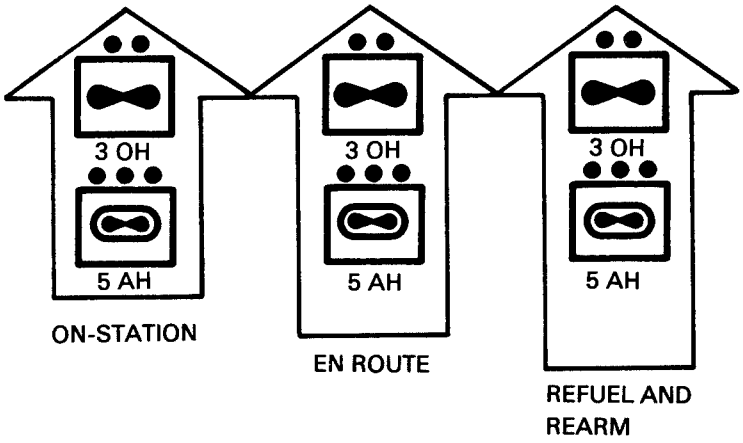


WHEN ATTACK HELICOPTERS RETURN TO THE FARP TO REARM, IT IS NOT NECESSARY FOR SCOUT HELICOPTERS TO RETURN UNLESS THEY NEED FUEL.

ORGANIZING FOR COMBAT

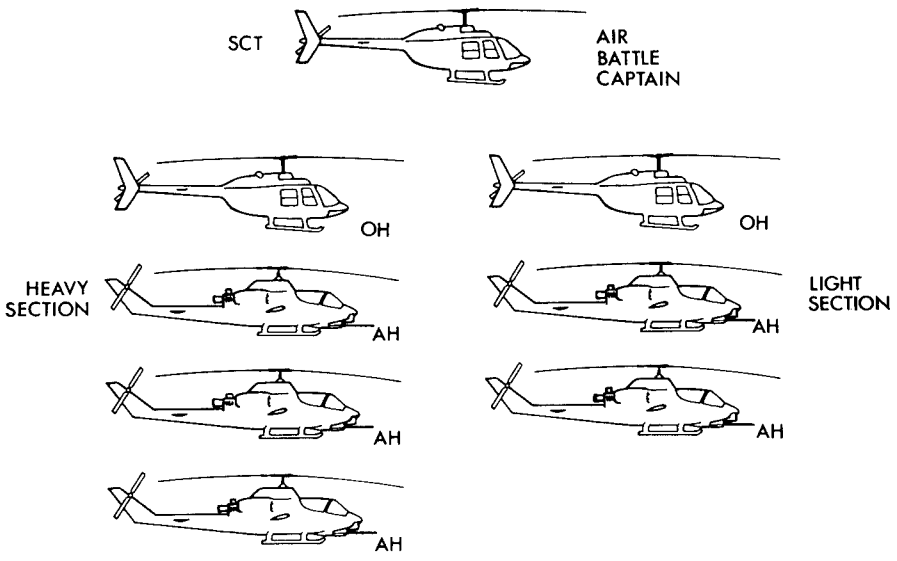
• TASK-ORGANIZING THE ATTACK HELICOPTER COMPANY. The company commander forms teams from aeroscout and attack helicopter platoons. The optimum team is three observation helicopters and five attack helicopters.

To maintain continuous pressure on the enemy, rotation of attack helicopter teams is essential.



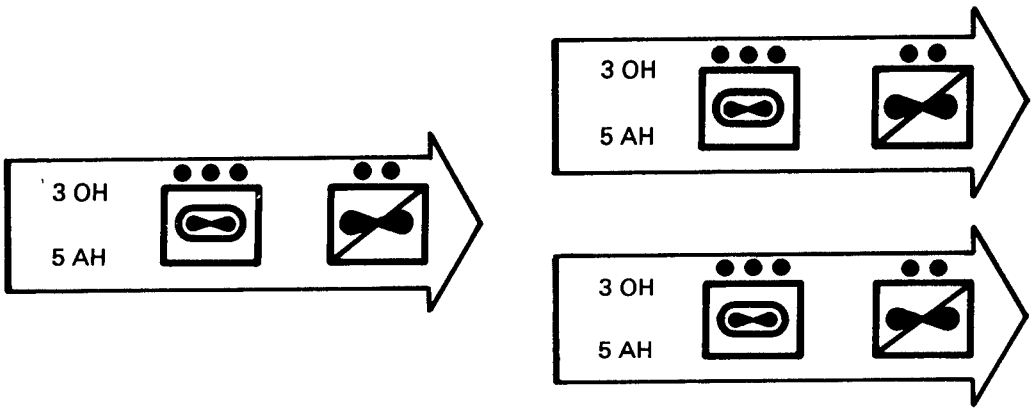
ONE-THIRD OPTION

Teams may operate in a variety of configurations. One way is to operate as shown below.

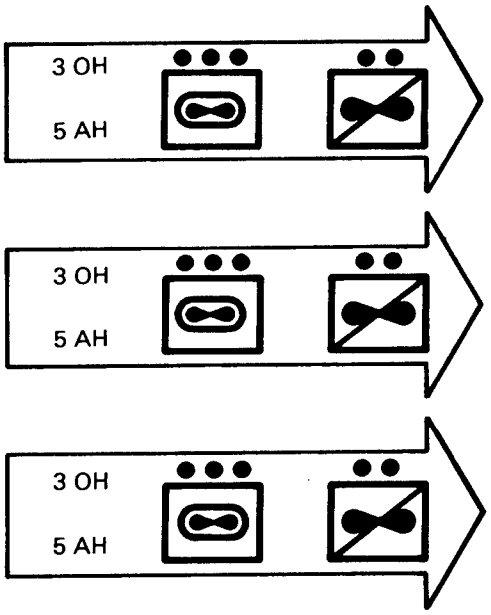


TEAM CONFIGURATION

When massed firepower is critical, the company may operate with two or three teams forward to cover a wide area and insure maximum destruction of the enemy for a short period. However, this will limit the capability to maintain continuous pressure since there will be a time lag before attack helicopters can be recycled on-station. This time lag depends on the distance from the target area to the FARP.



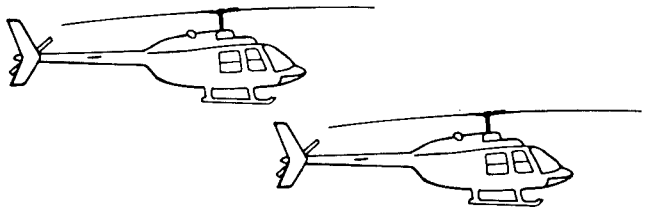
TWO TEAMS FORWARD



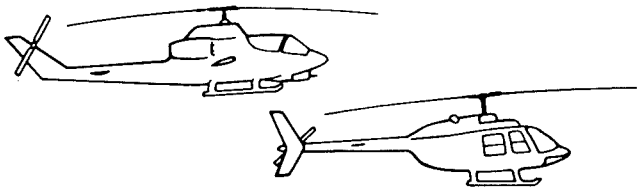
THREE TEAMS FORWARD

• TASK-ORGANIZING THE AIR CAVALRY TROOP. Since air cavalry troops are primarily organized to find the enemy, they organize for combat somewhat differently.

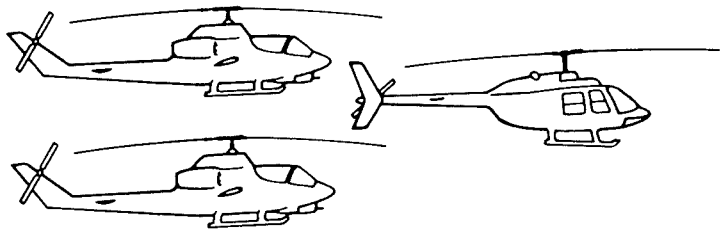
— Two scout helicopters may be used for reconnaissance *when enemy contact is not likely*. These teams maximize the reconnaissance effort and conserve the operational readiness of attack aircraft.



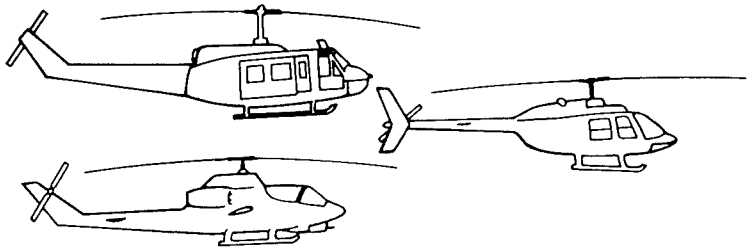
— One scout helicopter and one attack helicopter may be used *when enemy contact is possible or expected.* This organization permits fielding a greater number of teams for reconnaissance and surveillance missions.



— Two attack helicopters and one scout helicopter may be used *when enemy contact is expected or gained.*



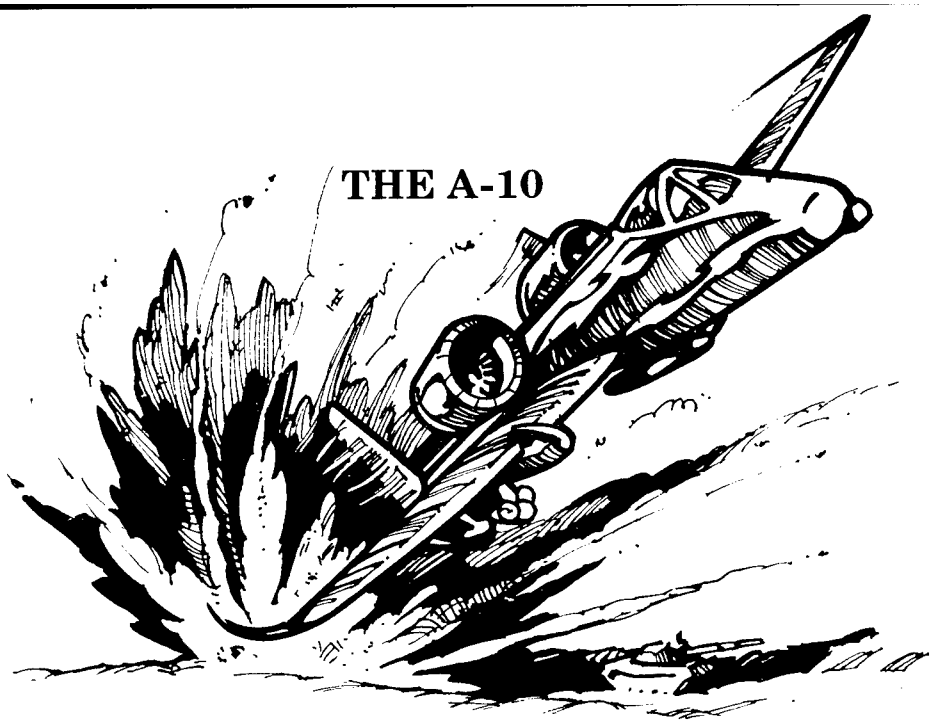
— A scout helicopter, an attack helicopter, and a utility helicopter with an aerorifle squad on board provide the capability to conduct ground reconnaissance, establish observation posts (OPs), or secure critical points.



When scout helicopters find the enemy, A-10s and additional attack helicopters may be called in to attack. When this happens, a joint air attack team (JAAT) is formed. Chapter 5 discusses JAAT operations.

CHAPTER 3

THE A-10



The A-10 is a highly maneuverable, lethal, and survivable weapon system designed for the close air support mission. It can be distinguished easily from other fighters by its straight wings, two fuselage-mounted engines, twin vertical stabilizers, and dark camouflage paint.

JAAT OPERATIONS CAN BE CONDUCTED WITH:
A-10s
A-7s
F-16s
F-4s

CAPABILITIES

The A-10's key to survivability is maneuverability and terrain masking. Self-protection devices and unique design characteristics increase the A-10's chances for survival.

- SELF-PROTECTION DEVICES

— A radar warning receiver.
— Flare and chaff dispensers.
— Radar jamming pods.

- UNIQUE DESIGN CHARACTERISTICS

— Titanium armor surrounding the cockpit (the "bathtub"). This protects the pilot and major flight control components from armor-piercing projectiles.

— Engines mounted separately above the fuselage. This feature decreases the possibility that one damaged engine will affect the other. The aircraft can fly on one engine.

— Self-sealing fuel tanks. This inhibits fire and explosion in case of hits in the fuel system.

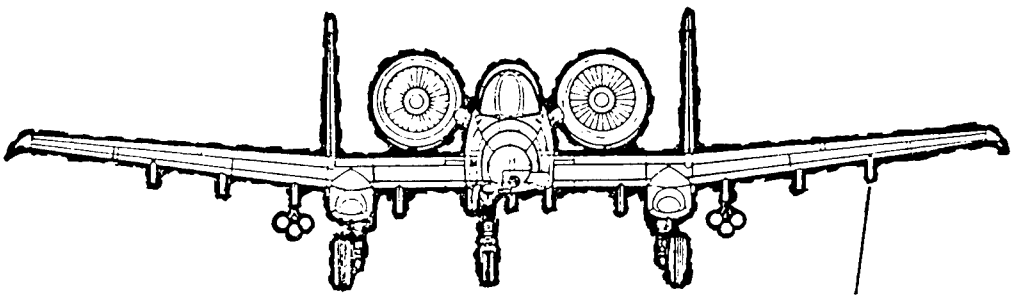
— Flight control systems. If the hydraulic flight control is damaged, it can be bypassed allowing the pilot to maintain control of the aircraft.

Due to its rugged construction, simple design, take-off and landing capabilities, and in-flight refueling the A-10 can operate from relatively austere forward operating bases. This shortens response time and increases the number of sorties the aircraft can fly in a given period. Normal combat sortie duration is approximately two hours.

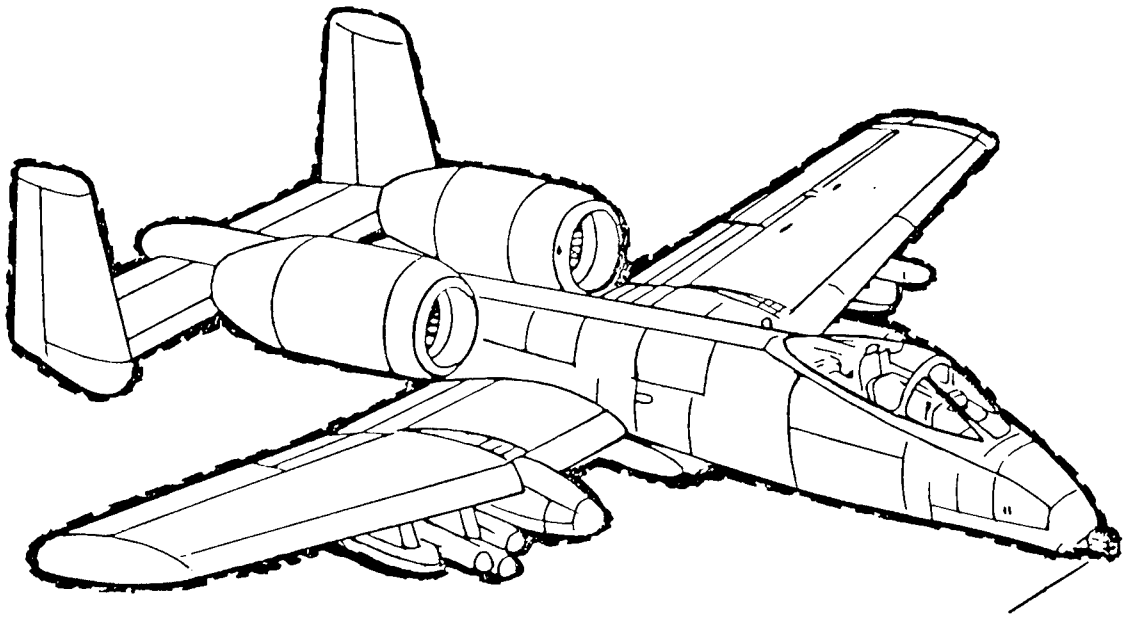
The A-10 has three radios — UHF, VHF, and FM. Secure voice systems (Vinson-KY) will soon be provided for UHF and VHF.

Navigation equipment includes TACAN and, in some A-10s, an inertial navigation system which can accept universal transverse mercator (UTM) or geographic coordinates. A-10 pilots are trained thoroughly in map reading and are highly skilled in low altitude tactical navigation.

A-10 THUNDERBOLT II (WARTHOG)



11 weapon-carrying stations



GAU-8A Gatling Gun

WEAPON SYSTEMS

The A-10 can carry a wide assortment of ordnance including general purpose bombs, rockets, and cluster munitions. It can also carry a passive laser energy detection system commonly referred to as "Pave Penny." This system is compatible with airborne designators as well as ground based systems such as the ground/vehicular laser locator designator (G/VLLD). The pilot uses "Pave Penny" as an aid to locate and identify targets.

During JAAT operations, the A-10 will most likely employ the Maverick air-to-ground guided missile and the internally mounted 30-mm Gatling gun. These weapons may be employed singly or in combination on the same attack.

- AGM-65 MAVERICK. The A-10 can carry up to six Maverick missiles. Realistic launch parameters for the Maverick are 2,500-4,000 meters because employment is limited by the pilot's ability to visually acquire the target. The missile has a shaped charge to penetrate armor, and is effective against any tank from any direction. Once launched, the missile guides itself, and the pilot is free to egress and/or position for subsequent attacks.

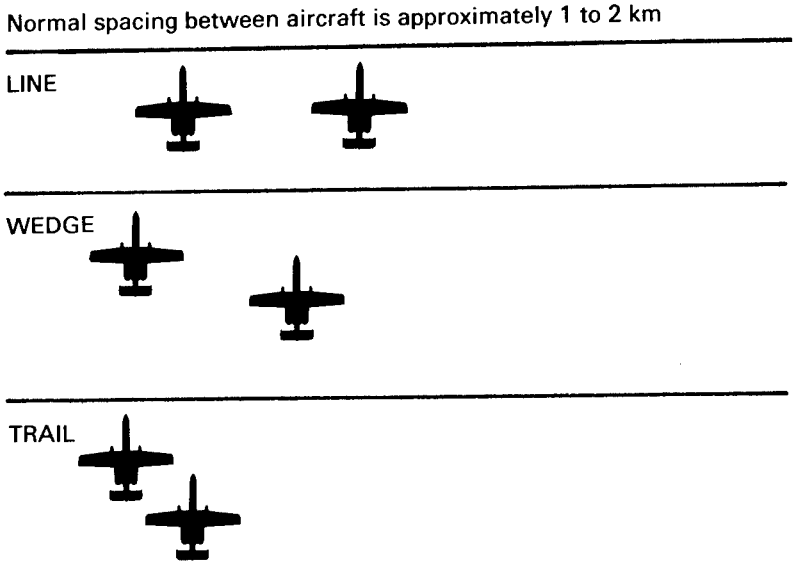
- GAU-8 30-MM GATLING GUN. The A-10 carries more than 1,100 rounds of 30-mm ammunition and can fire at a pilot selectable rate of 2,100 or 4,200 rounds per minute. The gun is effective against lightly armored targets or the rear of a tank at ranges approaching 2,000 meters; however, frontal attacks against tanks are ineffective. Firepower and mobility kills can be achieved from side and rear attacks in excess of 1,000 meters. Spent casings are retained in the aircraft thus reducing hazards to helicopters and ground forces.

EMPLOYMENT

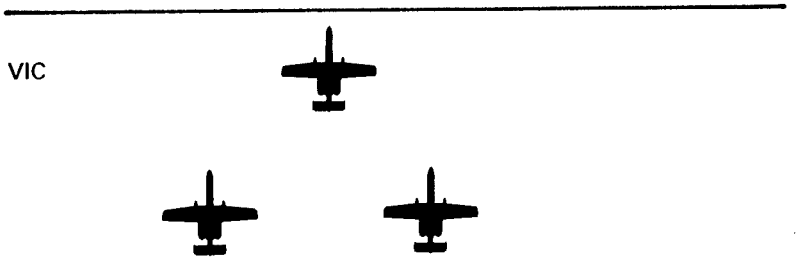
Flight formations may be two-ship, three-ship, or multiple two-ship depending on such factors as terrain, target array, weather, and defenses. There is no ideal formation for all situations, but the two-ship is the most flexible, especially in marginal weather conditions. A-10s will normally ingress at low altitude to stay below enemy radar and SAM coverage. They will maneuver enroute and in the initial attack phase in a tactical formation 1,000 to 3,000 meters apart. This distance allows each pilot to aggressively maneuver his aircraft, and to visually search for enemy targets, without conflicting with the other A-10(s). The most common two-ship attack formations are line, wedge, and trail. A three-ship formation is normally an inverted "V" formation referred to as a "VIC" (see illustration next page).

During the attack phase, the A-10 flight will ingress and egress via a route and altitude (100 feet or less when required) that maximizes terrain masking. Airspeeds are usually in the 300 to 350 knot range; fast enough for maximum performance manuvering, yet slow enough for effective visual search.

THE TWO-SHIP IS THE MOST FLEXIBLE FORMATION TO FLY AND IS VERY EFFECTIVE IN MARGINAL WEATHER CONDITIONS.



Trail attack (formerly B'NAI) is an extended trail attack formation with approximately 20 to 30 seconds spacing between aircraft.

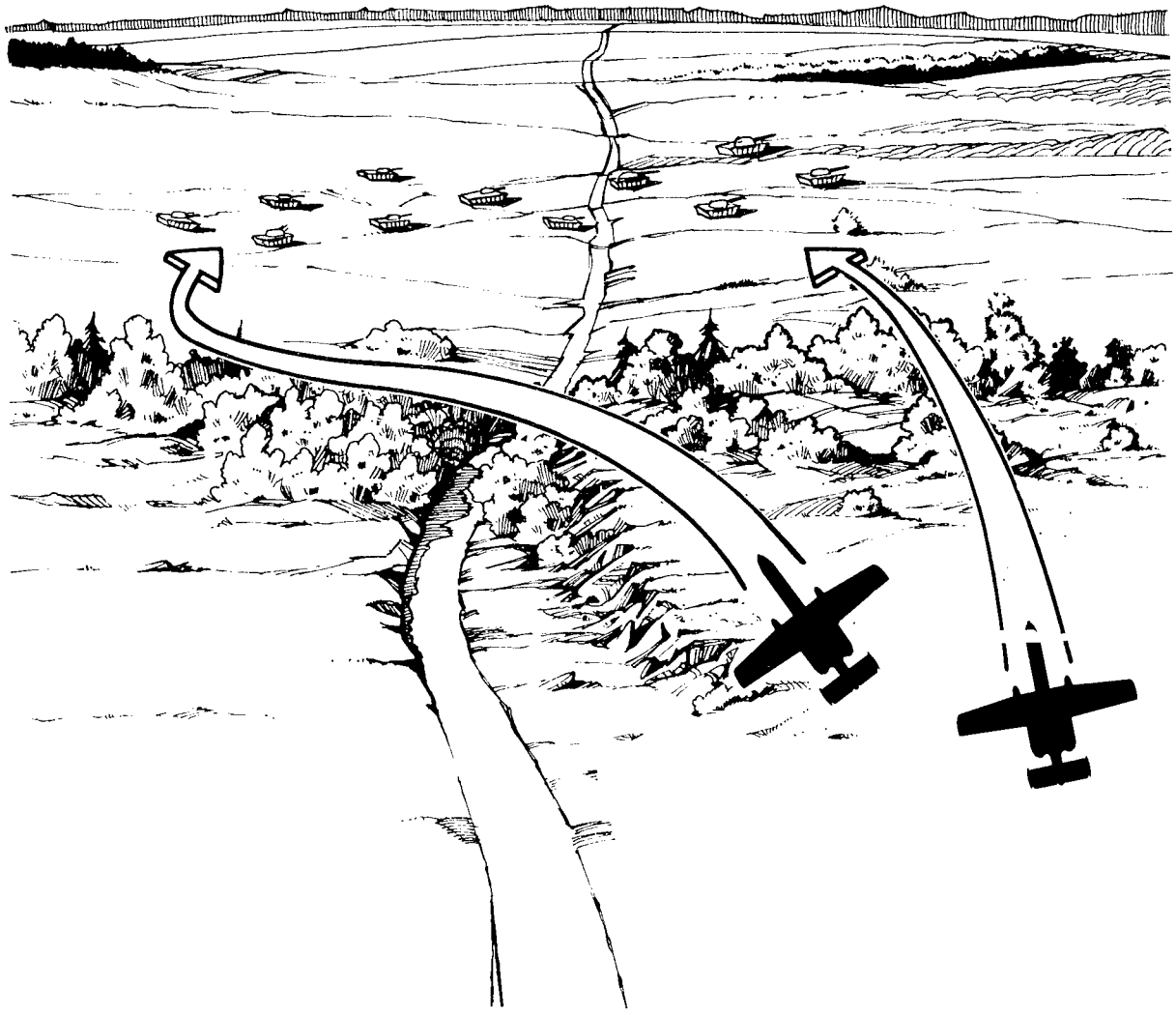


COMMON FLIGHT FORMATIONS

The flight leader will determine the attack profile and tactics. Attack options depend on the tactical situation. Generally, near simultaneous attacks from different axes afford the highest probability of surprise and defense saturation. A-10 pilots achieve flight coordination by maneuvering in relationship to each other, using timing criteria or geographic features.

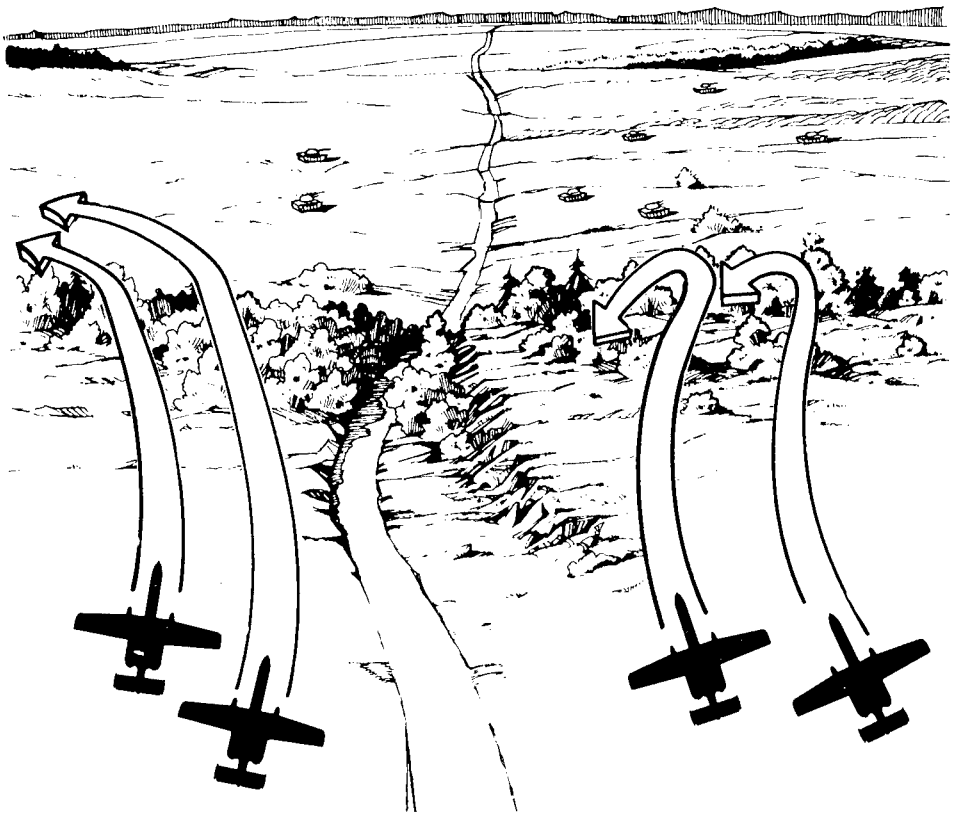
When the battlefield situation allows or requires, multiple flights of A-10s can work together on the same target array. The FAC (forward air controller) or the first flight leader will coordinate the attack and assign target priorities.

TYPICAL 2-SHIP ATTACK



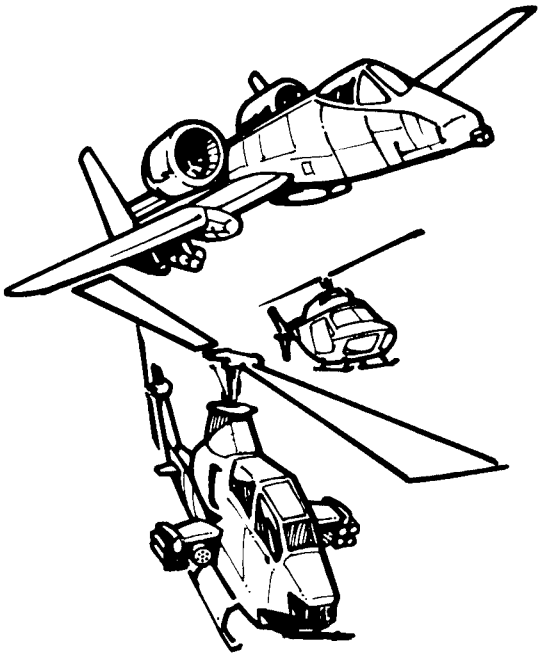
Once A-10s encounter the enemy each pilot will maneuver his aircraft in an unpredictable manner "jinking" to degrade the effectiveness of enemy air defense artillery until just before shooting. After shooting, each pilot will resume jinking until his aircraft regains terrain masking. Egress may be single ship or the flight may reform to regain mutual support.

MULTIPLE 2-SHIP ATTACK (2 X 2)



CHAPTER 4

FORMING A JAAT



The ground maneuver commander has overall responsibility for planning, coordination, and employment of the JAAT. When his maneuver forces need increased combat assets against a target array, he issues a request for attack helicopters and CAS aircraft to join the fight. Depending on the factors of METT-T (mission, enemy, troops available, terrain and the time available) the request may fall into one of two categories:

- PREPLANNED CAS REQUESTS

— To place fires into lucrative engagement areas.
— To support counterattacks.
— To support other tactical contingencies.

- IMMEDIATE CAS REQUESTS

— To attack vulnerable high priority targets that are not preplanned. Preplanned CAS sorties may be diverted to accomplish an immediate CAS request.

During the joint effort, attack helicopters and CAS aircraft (normally A-10s) operate with indirect fire weapons, air defense artillery (ADA) and ground maneuver forces against enemy armored formations, command vehicles, and enemy air defense weapon systems.

REQUEST PROCEDURES

Request procedures and actual formation of a JAAT may vary slightly between major commands. However, most organizations use the "classic" air request system described below:

BRIGADE LEVEL

- When attack helicopters are OPCON to brigade, the commander, on the advice of his FSCOORD and ALO, requests CAS aircraft through preplanned or immediate air request channels. He will specify "JAAT mission" in the request. This alerts the air support operations center (ASOC) that the commander prefers A-10 aircraft.

- When attack helicopter assets are not OPCON to a brigade, the commander forwards a request for aircraft to division. The brigade S3 or S3 Air and the ALO should request needed aircraft systems through their normal request channels. Both requests should state "JAAT." The CAS air request should also state "attack helicopters have been requested." The division G3 Air will then coordinate with the division aviation officer and air liaison officer to determine if attack helicopters and CAS aircraft are available. If so, G3 Air will coordinate with the FSCOORD and obtain approval from the division G3 to commit the aircraft. Approval is affected by:

  — Attack helicopter priorities.

  — Target suitability.

After receiving a JAAT request, the air support operations center (ASOC) or the tactical air control center (TACC) scrambles, diverts, or requests additional A-10s and provides the flight leader with a point of contact. The tactical air control party (TACP) normally acts as the point of contact and relays current mission information to the flight leader. In most instances A-10s and attack helicopter teams will not have an opportunity to coordinate before entering the battle against the same target array. In this case a *spontaneous* JAAT will occur on the battlefield. The ABC and A-10 flight leader can coordinate their joint attack only if common frequency information is available. See appendix B for more detailed information on JAAT communications.

PLANNING A JAAT

Indirect fire assets must be considered in JAAT planning. They should be used to slow the enemy, suppress his ADA, canalize, and button up his armored forces. The ground maneuver commander, FSCOORD, attack helicopter company commander, ABC, and FAC must coordinate the scheme of maneuver, close air support, and the fire support plan to the maximum extent possible. The ground maneuver commander should issue mission type orders to the ABC for the JAAT to support his battle plan.

The planning process involves these key personnel:

- Ground maneuver commander/S3.
- Fire support officer.
- Air liaison officer.
- Attack helicopter commander or liaison officer.

Planning considerations include, but are not limited to:

- Nature of target.
- Enemy avenues of approach.
- Fire support coordination.
- Provisions for suppression of enemy air defenses (SEAD).
- Communications.
- Current ground tactical plan.
- Contact points (CP)/initial points (IP).
- Weather.

- An additional consideration during the planning process is the appropriate vehicle for the FAC. The high mobility of the JAAT suggests that the FAC use a helicopter to facilitate linkup between Air Force and Army assets. The FAC will coordinate the attack of the A-10s with the ABC and attempt to insure a fully coordinated effort between the elements of the JAAT.

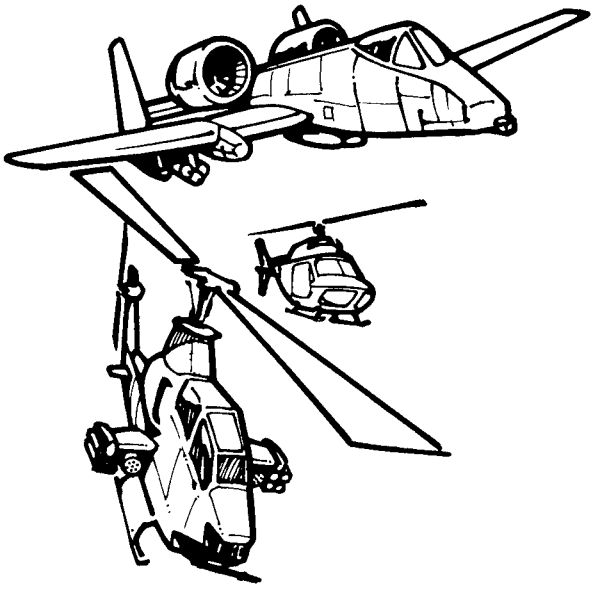
RELAYING BATTLEFIELD INFORMATION

The attack helicopter liaison officer or the attack helicopter unit commander relays battlefield information to the ABC while the A-10 flight leader receives his battlefield information through the tactical air control system. If there is sufficient time, the FAC and ABC should meet to coordinate the attack. If time is a critical factor as in a spontaneous JAAT, the FAC or ABC in the FAC's absence, may relay battlefield information to the CAS flight leader. This briefing may be accomplished by radio at a predesignated geographical location.

ALTHOUGH JAAT ASSETS MAY BE REQUESTED AND PLANNED FOR, THE GROUND MANEUVER COMMANDER MUST BE PREPARED TO EXECUTE HIS MANEUVER PLAN WITH ANY OR ALL OF THE JAAT COMPONENTS ABSENT.

CHAPTER 5

JAAT OPERATIONS



Upon receipt of a JAAT mission, the attack helicopter company commander and the supported battalion tactical air control party's (TACP) forward air controller are alerted and detailed attack coordination begins. Key personnel for coordination and execution are the:

- Ground maneuver commander.
- Air battle captain (ABC).
- Forward air controller (FAC).
- A-10 flight leader.

The ABC has overall coordination responsibility for the JAAT operation. He should be keenly aware of the ground and air tactical plan and should maintain continuous contact with the enemy and friendly elements.

The ABC coordinates the air attack upon the enemy based on the ground scheme of maneuver. *He does not dictate attack methods.* The flight leader and attack helicopter section leaders control their individual elements.

Scouts reconnoiter the target area for battle positions, avenues of approach, choke points, and potential engagement areas. Locating enemy air defense systems for subsequent suppression is particularly important. Once the enemy is acquired, visual contact must be maintained throughout the operation.

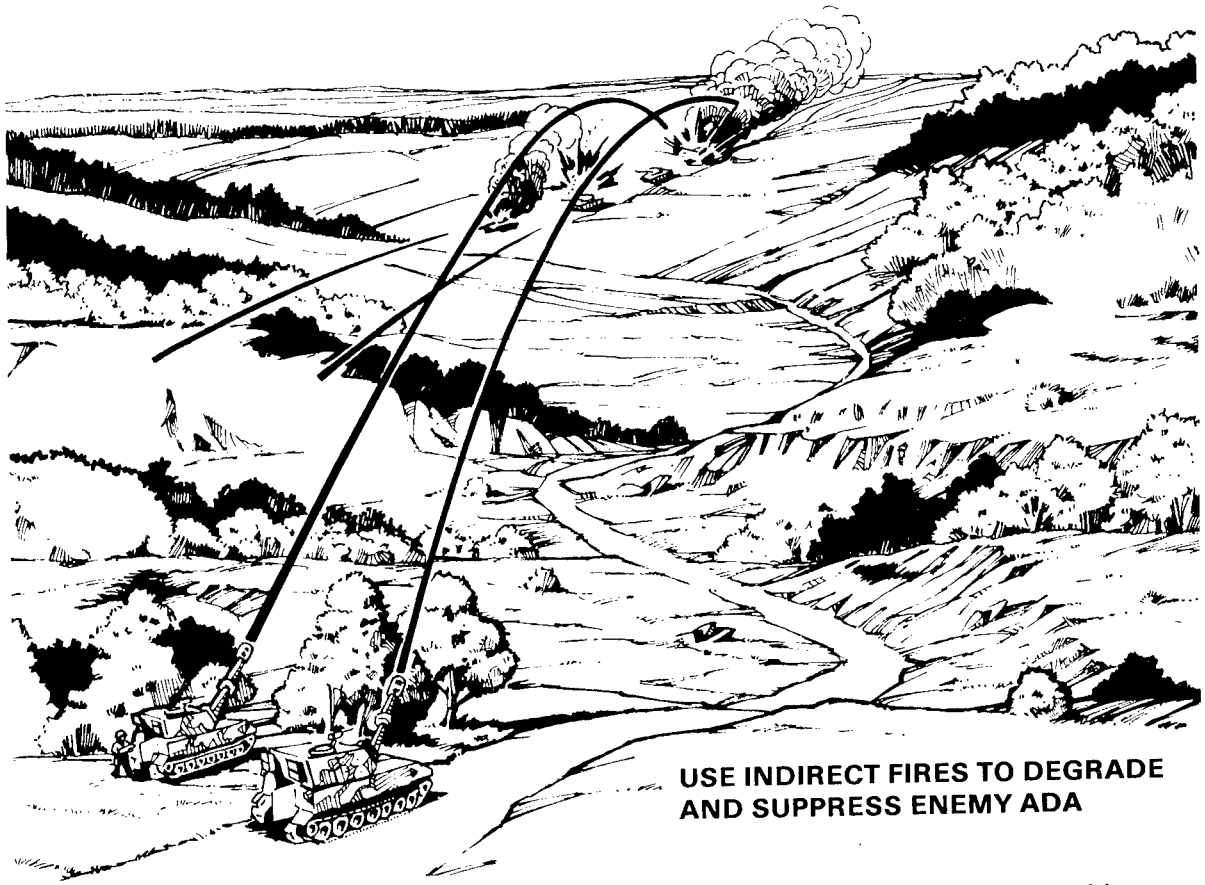
The scouts should initiate indirect fire support during reconnaissance and continue it throughout the operation.

A typical field artillery operation against an advancing armor unit may include an initial engagement with dual purpose improved conventional munitions (DPICM) or high explosive projectiles. DPICM used with either variable time (VT) or quick (contact) fuzing will slow the attack, suppress air defense radars, and cause armored vehicles to

button up. As opposing forces are engaged, fuzing may be changed to VT to reduce obscuration in the target area and keep armored vehicles buttoned up and air defense vehicles suppressed.

FIELD ARTILLERY SHOULD BE SHIFTED TO SUPPRESS FOLLOW-ON TARGETS NOT UNDER IMMEDIATE ATTACK BY ATTACK HELICOPTERS AND CAS AIRCRAFT.

FIRE MOVEMENT



The ABC employs fire and movement. One team fires while the other moves to new positions to maintain continuous pressure on the enemy force. The one-third option is usually used to maintain continuous contact with enemy forces.

If the enemy ADA or enemy air threat prevent the JAAT from doing its mission, intense effort will be made to suppress the threat hampering the team. Enemy ADA must be suppressed by any asset available and suited for the purpose. Once enemy ADA has been suppressed, the JAAT can concentrate on destroying enemy forces.

IF NO OTHER ASSETS ARE AVAILABLE, THE JAAT MAY HAVE TO PERFORM ITS OWN SUPPRESSION OF ENEMY AIR DEFENSE (SEAD). *THIS IS THE LEAST DESIRABLE METHOD,* SINCE SOME ATTACK HELICOPTERS WILL HAVE TO BE CONFIGURED FOR AND DEDICATED TO THE SEAD ROLE. THIS WILL DETRACT FROM THE EFFORT OF THE JAAT AND REDUCE ITS ARMOR-KILLING CAPABILITY.

Throughout the operation, scouts:

- Locate and identify enemy targets.
- Provide visual security for attack helicopters.
- Employ indirect fires.
- Maintain visual contact with both enemy and friendly forces.
- Seek alternate firing positions for attack helicopters.
- Pass pertinent information to the air battle captain.

Upon arrival in the battle area, A-10s contact the FAC for attack information. The battlefield environment may not permit direct control by the FAC. This environment may limit the FAC's role to passing the initial target brief and coordinating with the ground maneuver commander and the ABC. As a minimum, the A-10 flight leader will provide:

- Call sign/mission number.
- Ordnance available.
- Time available.

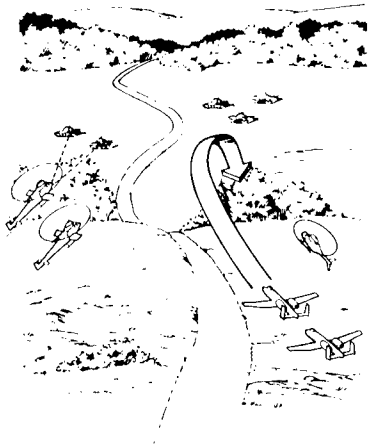
The FAC or ABC will pass the following target information either directly or through the airborne tactical air coordinator [TAC(A)]:

- Target location (coordinates or geographic reference).
- Initial Point (IP).
- Heading and distance from CP/IP to target.
- Target description.
- ADA or air threat.
- Position and activities of attack helicopters.
- Friendly locations.
- Restrictions (artillery firings, etc.).
- Additional information as necessary (such as required inbound calls).

If conditions do not permit a full target briefing by the FAC, TAC(A), or ABC, the flight leader must receive target location (UTM coordinates) and description.

A-10s usually enter the target area in a two-ship flight as the basic fighting element. Terrain and weather will influence how many flights can operate in the area at one time. The first A-10 flight leader to arrive in the target area coordinates target handover with subsequent A-10 flights/FACs. Flights depart the holding area or contact point using low-altitude tactical navigation which maximizes terrain masking to avoid detection. During ingress, communication is established between A-10s and the FAC/ABC. The FAC/ABC will provide updated enemy, friendly, and target information as necessary and give final attack clearance.

SECTOR ATTACK

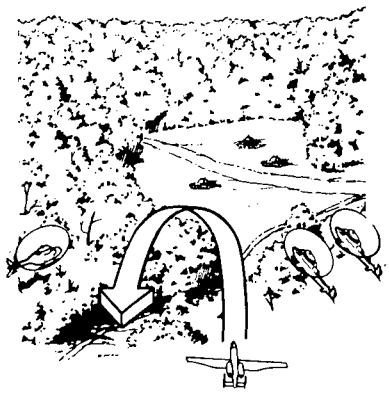


Attack helicopter fires should be keyed to the A-10 inbound call (expressed in units of time). Enemy air defense firing will probably increase as A-10s enter the battle, enabling attacking helicopter pilots to identify ADA sites.

There are three basic operating options available when employing the team: *sector attack, sequential attack, and combined attacks.* These are basic employment options and provide a departure point from which to build an attack plan. They do not represent a single solution and may be modified to meet the needs of the tactical situation.

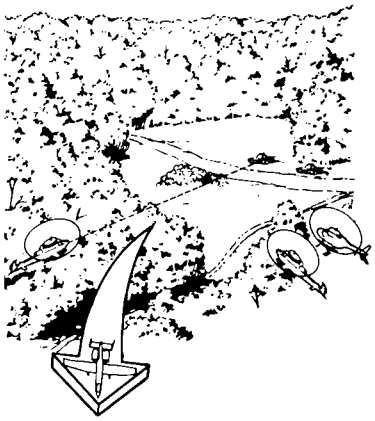
During a *sector attack* the area of operation is sectored by the FAC and ABC. Sectoring includes the target and avenues of approach. Each element of the JAAT is given a specific operating sector. With the target area divided into distinct sections the two groups can provide mutual support while working within their own sector. Sector attack can simplify aircraft coordination. It can also reduce problems with ordnance fan and fragmentation clearance. It allows aircraft to function with reduced communications during periods of extensive communications jamming.

SEQUENTIAL ATTACK



Sequential attack is used when the target area is small and the attack avenues are limited. This attack allows each element to work independently to destroy the target. Sequential attacks reduce simultaneous target engagements. This option works well when A-10s enter the battle and engage the targets as attack helicopters maneuver to new firing positions. Attack helicopters then engage the target as A-10s momentarily exit the target area. A-10s and attack helicopters attack until:

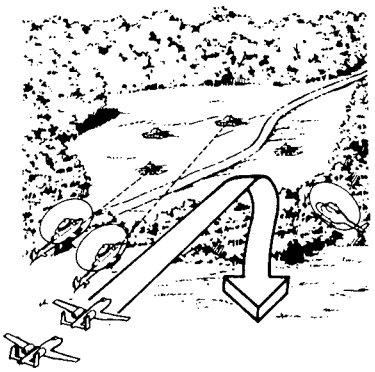
- Target is destroyed.
- Ordnance is expended.
- Aircraft require fuel.



If the situation permits, the elements of the team can attack the target simultaneously using the same basic attack avenues. Coordination requirements are more critical with this *combined attack*. The inbound call is used to sequence the individual attacks. Ideally, the helicopters attack as the A-10s approach the target. As the A-10s begin their attack, the attack helicopters remask and move to a new attack position if necessary. The attack helicopters unmask to re-initiate the attack as the A-10s complete their escape maneuver and exit the target area.

The attack team may employ a decoy operation in conjunction with any of the three basic employment plans. One element of the JAAT can be used as a decoy for the air defense threat. The other element can then maneuver to an attack position and engage the primary target or neutralize the threat. This operation is especially effective for the destruction of a high priority target. This decoy tactic is effective only if the exact enemy location is known.

COMBINED ATTACK



If the situation permits, attack helicopters and A-10s should reattack to keep continuous pressure on the target. Once cleared into the target area by the FAC/ABC, clearance for individual attacks within the sector is normally not required. The FAC/ABC can end the attack by using prebriefed code words or by direct order. Following each attack, jinking should be used until terrain masking is achieved or until line-of-sight with enemy systems is broken.

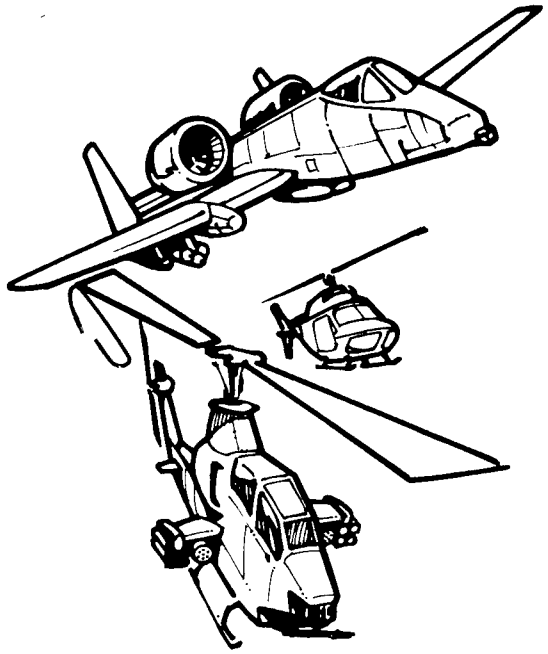
Continuous A-10 operations at low altitude and maximum maneuvering are tiring and may require short periods away from the target area to regroup and reassess tactics. However, one flight should remain on target as long as possible.

When the engagement ends, A-10s exit, rejoin, and return to base (RTB). Mutual support must be maintained to the maximum extent possible. As with ingress, egress is normally at low altitude, using terrain masking for minimum exposure to enemy air defenses.

Sustained combat requires continuous pressure in the target area. A-10 flights and attack helicopter teams departing the target area update inbound flights and teams through the FAC or ABC with the most current target area information. When possible, the ABC or a scout remains in the target area to hand over the target to inbound flights and teams. The JAAT operation is then repeated as long as assets are available or until the mission is accomplished.

CHAPTER 6

TRAINING FOR THE JOINT AIR ATTACK TEAM



JAAT training should be guided by the concept that each element of the team retains its own system of command and control and executes according to proven individual doctrine and tactics. The emphasis in training should be to develop procedures that will maximize the effectiveness and survivability of the team and provide positive integration into combined arms operations.

Attack helicopter units train independently, using appropriate training manuals and army training and evaluation programs (ARTEP). A-10 pilots also train independently to achieve "mission ready" status. Each should achieve unit prescribed levels of proficiency before engaging in JAAT training.

PREPARATION FOR TRAINING

Participants should be briefed on conduct of the training and all safety requirements. When possible, pilots from the A-10/attack helicopter units should visit each other's unit to provide this training.

Unit commanders should use the following training options as a guide when conducting JAAT training. These options can be tailored to meet available assets.

ALL ELEMENTS OF THE JOINT AIR ATTACK TEAM SHOULD BE FAMILIAR WITH:

- Enemy threat
- Enemy tactical threat
- Indirect fire support
- Capabilities and limitations of the A-10
- Capabilities and limitations of attack helicopters
- Capabilities and limitations of observation helicopters
- Fundamentals of combined arms operations
- Interservice and team communications procedures
- Attack helicopter team tactics
- Joint A-10 and attack helicopter tactics

PROPOSED TRAINING OPTIONS FOR THE JOINT AIR ATTACK TEAM

TRAINING OPTION ONE — Coordination training for CAS flights and attack helicopter teams. Training may be conducted in any suitable low flying area using real or simulated targets. Face-to-face or telephonic briefings and debriefings will improve training but are not mandatory when mutually agreed upon training objectives and scenarios are used.

TRAINING OPTION TWO — A broader program in which JAAT team members, FACs, ground maneuver, and combat support elements develop and refine coordination employment procedures. Emphasis is on integration of fires, command and control, communications, target identification, and hand-over procedures. This option begins at the basic level and progresses into combined arms scenarios. Face-to-face coordination and the use of OPFOR increases the training for all elements. Concurrent with this option, briefing teams comprised of JAAT members may host seminars for division, brigade, and battalion commanders and staff officers on JAAT employment and integration.

TRAINING OPTION THREE — Integration of JAAT into major exercises using wartime procedures and scenarios as much as possible. Emphasis should be on the involvement of participants not trained under the preceeding options; (*i.e.*, the tactical air control system and division and corps staffs). The full and proper employment of JAAT should be a major exercise objective.

PLANNING AND EXECUTION CONSIDERATIONS

PRIOR TO MISSION

- Define the objectives and training goals.
- Review the fundamentals of JAAT operations.
- Discuss and develop the scenario. The scenario should be incorporated into the ground maneuver commander's field training exercise to maximize the training benefits for the combined arms team.
- Outline the training periods by participants, roles, and responsibilities.
- Discuss the training area.
  - — Range areas.
  - — Restricted areas.
  - — General physical layout.
  - — Particular emphasis on restrictions, constraints, and limitations.
- Discuss the capabilities/limitations and tactics of the key elements in the JAAT.
  - — A-10 capabilities and limitations.
  - — A-10 tactics.
  - — Attack helicopter capabilities and limitations.
  - — Attack helicopter tactics.

— Scout capabilities and limitations.
— Scout tactics.
— Indirect fire integration.
— Fundamentals of combined arms operations.
— Operations with or without a FAC.
— Enemy tactical doctrine.
— JAAT communications procedures.
— Command and control.

- Discuss and resolve remaining administrative and logistical issues.

FLIGHT OPERATIONS

- Issue operations order.
- Conduct premission briefing for the JAAT (face-to-face or telephonic).
- Scout helicopters reconnoiter the battlefield.
- Attack helicopters move to assembly area.
- Unit's FAC, in an observation helicopter, conducts his own reconnaissance.
- Scout helicopters pick up attack helicopters and move them to battle positions.
- Attack helicopter team attacks targets on the battlefield.
- The unit TACP calls for CAS.
- The flights launch to meet preplanned time on target (TOT) or from alert status.
- A-10s approach the battle area at low altitude.
- After mission completion, all elements return to base (RTB).
- Conduct detailed debriefing by each element in the play, to include OPFOR personnel in the battle area.

SUBSEQUENT MISSIONS

- Correct identified problems.
- Introduce new variables such as:
— Absence of FAC.
— A-10 reattacks.
— Rotating attack platoons on station.
— Communications jamming.

— Integration of tactical radar threat generator.
— Enemy air defense suppressed by attack helicopter and/or fire support means.
— A-10 quick-turn operations.
— A-10s on station first.
— Live fire.
— Impromptu initial points.
— Target attacks from multiple directions.
— Use of progressively lower altitudes.

APPENDIX A

REFERENCES

Required Publications

FM 6-20 ..... Fire Support for Combined Arms Operations

FM 17-50 ..... Attack Helicopter Operations

FM 100-5 ..... Operations

FM 101-5 ..... Command and Control of Combat Operations

FM 101-5-1 ..... Operational Terms and Graphics

TT 100-44-1 ..... Joint Suppression of Enemy Air Defense (J-SEAD)

TAC Manual 3-1 ..... Mission Employment Tactics

Related Publications

FM 17-35 ..... Aeroscout Procedures

FM 17-40 ..... Helicopter Gunnery

FM 17-47 ..... Air Cavalry Combat Brigade

FM 17-95 ..... Cavalry

FM 100-26 ..... Air-Ground Operations System

STANAG 2019 ..... Military Symbols

STANAG 2355 ..... Procedures for the Employment of Helicopters in the Anti-Armor Role

STANAG 2878 .... General Safety Regulations for Helicopter Users

STANAG 2930 ..... Suppression of Air Defense by Artillery

STANAG 3805 ..... Doctrine and Procedures for Airspace Control in the Combat Zone (ATP-40)

Appendix B

FIRE SUPPORT

Fire support requirements for the attack team are generally the same for ground maneuver units.

The fire support element of the ground maneuver unit controlling the overall operation usually plans artillery fire support for the joint air attack team (JAAT). The forward air controller (FAC), fire support coordinator (FSCOORD), commander of the ground maneuver unit controlling the overall operation, S3, attack helicopter liaison officer (AHLO), and air battle captain (ABC) work together to insure that adequate supporting fires are planned for the JAAT.

Fire support by field artillery is the means most frequently employed to support the attack team. Field artillery is used primarily to suppress enemy air defenses. This permits the attack team to employ its point target firepower against the enemy.

The attack team will obtain field artillery support:

— *Most often*, from the field artillery supporting the force as a whole. When operating with a brigade, for example, field artillery support will normally be provided by the field artillery battalion operating in direct support of the brigade.

— *Infrequently*, from a field artillery battalion or battery temporarily dedicated to support an attack team.

— *On other occasions*, pilots may simply be provided the communication frequency of field artillery units supporting ground forces in the operational area.

When possible, suppressive fires are planned in advance against known or suspected enemy locations and are called for when needed. Preplanned targets also serve as reference points for shifting to targets of opportunity that appear in their vicinity.

When the attack team is operating with a ground maneuver unit, the unit fire support officer (FSO) generally does the initial fire support planning. He works closely with the AHLO and the unit tactical air control party (TACP) to plan fire support. He also informs other affected fire support officers and supporting field artillery units of fire support requirements for the attack team when appropriate.

Air defense weapons and enemy helicopters accompanying lead enemy attack elements constitute the most critical threat to the joint air attack team. Most ADA weapons can be neutralized or suppressed by observed fire using dual-purpose improved conventional munitions (DPICM), or high-explosive projectiles with variable time (VT) fuzes. High priority should be assigned to this effort immediately before the JAAT arrives.

Fire support plans should be kept simple so that the air battle captain (ABC) and forward air controller (FAC) can be briefed rapidly. Normally the briefing is done by radio; this makes interpreting data more difficult.

FIRE SUPPORT COORDINATION

The FSCOORD at each level of command is responsible to the maneuver commander for the coordination of all fire support within the maneuver commander's area of operation. The FSCOORD, through the fire support element (FSE), has the means to employ and integrate the fire support system resources. Once the operation is underway, the ABC or aeroscout works directly with the FSCOORD to coordinate continuous fire support.

In situations where the ABC or an aeroscout cannot communicate directly with the FSCOORD at the maneuver unit command post, other options are available.

- Aeroscout to a company fire support team (FIST) chief. The FIST chief has direct access to mortars as well as to support field artillery. This option would be used when communication cannot be established with the brigade or battalion fire support officer (FSO).

- Aeroscout to field artillery aerial observer (FAAO). The attack helicopter team may be augmented with a FAAO team from division artillery. A FAAO team operates from a US Army OH-58 and can serve as the FSCOORD for the JAAT. This is a good option when the attack team is operating in an area where contact with ground forces is either not possible or unnecessary.

- Aeroscout to dedicated or supporting artillery. This option requires increased coordination responsibilities for the aeroscout, but is the most desirable option for JAAT. This option may be used when the ground maneuver commander dedicates artillery support to the JAAT operations, or when radio contact with the FSO is not possible.

Fire support coordination measures are described in FM 6-20. The following fire support coordination measures can be specifically tailored for JAAT operations:

- Attack helicopter, close air support (CAS) and indirect fire systems complement and reinforce each other when used together. Attack helicopters and CAS operate well below the trajectories of indirect fire systems. However, aircraft should not overfly firing positions of indirect fire systems and should stay at least 500 meters from impacting rounds.

- Brigade FSOs and AHLOs can provide advice to the TACP and flight leader as to the best routes in and out of the battle area in order to avoid overflying field artillery positions. The following tables describe ways to employ CAS and artillery in the same target area.

NO FIRE AREA (NFA)

An area in which no fires or the effect of fires are allowed. Two exceptions include:

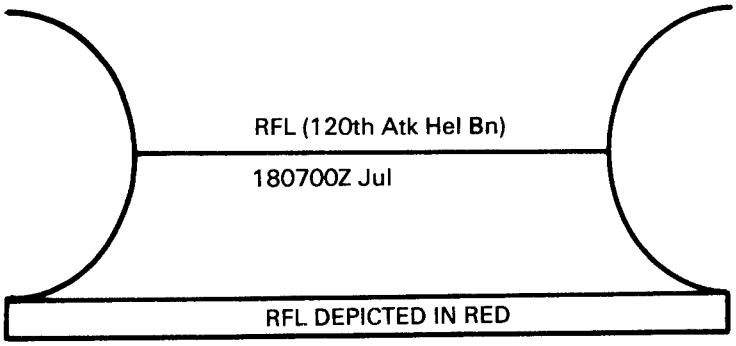
1. When establishing headquarters approves fires (temporarily) within NFA on a mission basis.

2. When an enemy force within the NFA engages a friendly force, the commander may engage the enemy to defend his force.

Purpose — to prohibit all fires or their effects into an area without prior clearance.

RESTRICTIVE FIRE LINE (RFL)

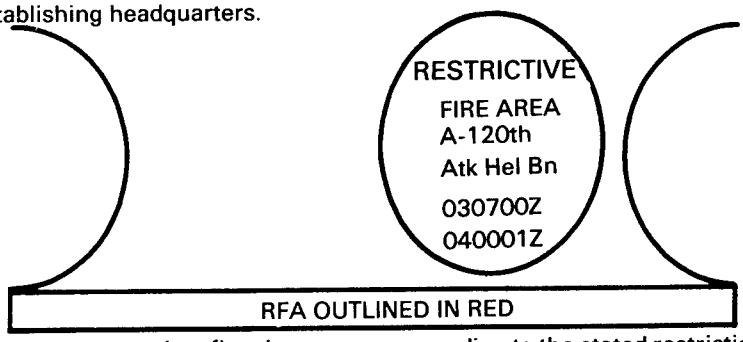
A line established between converging friendly forces which prohibits fires or effects from fires across the line without coordination with the affected force.



Purpose — to prevent interference between converging friendly forces.

RESTRICTIVE FIRE AREA (RFA)

An area in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters.



Purpose — to regulate fires into an area according to the stated restrictions.

TABLE 1. OPTIONS FOR PASSING FRIENDLY ARTILLERY INFORMATION TO CAS PILOTS (TABLE CONTINUED NEXT PAGE→)

TECHNIQUE	DESCRIPTION	SIMPLICITY	COORDINATION EFFECTIVENESS
GRID COORDINATES	Grid coordinates of friendly artillery points of impact are sent to the fighters by radio.	Very simple for FSO, but requires lengthy radio transmissions to fighters and map handling by pilots.	Satisfactory only if secure commo and sufficient time is available for pilots to plot and read battle map.
GRID LINE	Friendly artillery points of impact are sent by radio in relation to a grid line; e.g., "Artillery south of 74 grid line."	Simple from all viewpoints. Does require map handling by pilots.	Same as grid coordinates.
GRID SQUARE	Grid square containing friendly artillery points of impact sent by radio; e.g., "Artillery in grid square 5878, 5879, and 5880."	Simpler than grid coordinates, but still requires lengthy radio transmissions and map handling by pilots.	Same as grid coordinates.
CLOCK ON GEOGRAPHIC FEATURE	Friendly artillery points of impact described by radio in relation to a prominent terrain feature with grid north understood as 12 o'clock; e.g., "Artillery from Blue Lake, 12 to 3 o'clock, 1800 meters."	Simple for FSO, FAC, and pilots who have trained properly.	Highly effective for FSO, FAC, and pilots who have trained properly.
LINE ON GEOGRAPHIC FEATURE	Friendly artillery points of impact described by radio in relation to a line on a prominent terrain feature; e.g., "2 miles west of Red River."	Good.	Effective only if terrain feature is prominent from low altitude and separates CAS targets from artillery concentrations.
REAL TIME OBSERVATION	FAC cautions fighter pilots friendly artillery is impacting in the target area. Pilots visually determine the active impact points and avoid.	Good.	Effective but pilots cannot plan attack until they are in immediate area. Best option when commo between FAC and FSO are limited.
WHITE PHOSPHORUS ROUND ON EACH CONCENTRATION	Same as real time observation with a WP marking round fired periodically in each concentration.	Good.	Same as above.

DESCRIPTIVE OF SITUATION	SECURITY	MANAGEABILITY	TRAINING IMPACT
Exact description of situation from FSO viewpoint, but gives more information to pilots than they need.	Less secure. There is limited capability for secure communications with inbound fighters from the ground.	Unsatisfactory from pilot's viewpoint. Difficult to read a battle map and maintain a "heads up" posture.	None. Only standard map reading required.
Less descriptive than a grid coordinate.	Less secure. Same as grid coordinates plus would be a clear indication where artillery was not being fired.	Better than grid coordinates, but still requires pilots to handle a map.	None. Only standard map reading required.
Same as grid line.	Less secure when secure communications are not available.	Unsatisfactory. Same as grid coordinates from pilot's viewpoint.	None. Only standard map reading required.
Excellent. Easily adapted to pass other target info to pilots.	Better than all above, but satisfactory only if terrain reference can be passed to pilots in a secure manner.	Good as long as system is understood ahead of time.	Air and ground units must train using procedures.
Good if terrain feature separates artillery concentrations from CAS targets.	Unsatisfactory would be a clear indication where artillery is not being employed.	Good.	Some impact. Feature must be selected by FSO to be prominent from pilot's perspective.
Good, but may be difficult to separate from enemy artillery.	Good.	Good.	Limited impact. Pilots should have opportunity to observe artillery fire during training.
Better than above, but is subject to the same limitations.	Fair.	Good.	Limited impact. Local firing unit. SOPs must be coordinated in advance with assigned TACPs.

TABLE 2 OPTIONS FOR SEPARATION OF CAS AND IMPACTING FIELD ARTILLERY ROUNDS (TABLE CONTINUED NEXT PAGE →)

	DESCRIPTION	MAXIMUM FIREPOWER	CONTINUOUS PRESSURE	ADA SUPPRESSION
JOINT ATTACK	CAS, AH, and artillery attack same targets simultaneously. CAS use real time observation to see and avoid artillery danger areas.	Best for a limited number of targets attacked over a short period of time.	Excellent for a time constrained attack. Could be poor if AH, fighters, and artillery all run short of ammo before the target array is defeated.	Excellent.
SEPA— RATION BY SECTOR	Target array divided into sectors for attack by either artillery and AH or fighters and AH. No-fly-no-fire sectors established by by FSO-ALO.	Marginal for a limited target array in a time constrained attack. Each separate part escapes either the target defeat capability of artillery or A-10s.	Good.	Unsatisfactory for sector not attacked by artillery.
SEPA— RATION BY TIME	Key targets attacked by CAS for a given period of time; then targets attacked by artillery for a given period of time.	Good, since firepower distributed over time across target array. Could reduce amount of firepower delivered in a time constrained attack.	Good.	Satisfactory if artillery is shifted away from ADA targets only for short periods. Close coordination is mandatory.
REDUCED RISK JOINT ATTACK	Artillery attacks in vicinity of CAS targets conducted with ICM and WP marking round. Priority for artillery is BMPs following tanks in order to shift as far as possible from CAS targets.	Good.	Good.	Excellent if target information is good enough to keep ADA in vicinity of tanks suppressed.
CHECK FIRE	All artillery which could affect CAS tactics check fire for duration of CAS attack.	Unsatisfactory. Indirect fires cannot be employed on targets not serviced by AH and CAS aircraft.	Unsatisfactory. Sections of the target array not attacked by AH or CAS would be free to operate without interference from indirect fire.	Unsatisfactory. Suppression of ADA would be totally dependent on direct fire weapons. Sections of the ADA target array could escape attack.

FREEDOM OF CAS TACTICS	ADVERSE IMPACT ON ATTACK HEL OPERATIONS	COORDINATION SIMPLICITY	DISTRIBUTION OF AMMUNITION ON PRIORITY TARGETS	TRAINING IMPACT
Most impact. Tactics must be adjusted to artillery concentrations so that danger areas can be avoided.	None.	Simple. Can be carried out with limited communications between FAC, FSO, fighters.	Poor if large target array is to be attacked for a long period of time.	Low impact. Pilots should have opportunity to observe artillery fires during training.
Satisfactory as long as no-fly areas are well coordinated.	Significant for sectors without artillery fire.	Advance coordination between fighters and artillery units required.	Poor Ammunition distributed by area instead of target priority and optimum attack system.	Low impact.
Satisfactory if coordination between FSO, ALO, and pilots is good.	Limited if time windows are short and well coordinated with attack team leader.	Complicated. Requires close association between artillery units, FAC, and fighter units.	Good if a large target array is to be attacked for a long period of time.	Significant impact. Best accomplished between units which have had close association during training.
Satisfactory if coordination between FSO, ALO, and pilots is good.	None.	Simple from pilot viewpoint. Requires advance coordination with artillery units.	Good if a small target array is to be attacked for a short period of time.	Significant impact. Close association between units during training is desirable.
Least impact if unsuppressed ADA is not a factor.	Highly significant. ADA systems not adequately suppressed. Immediate indirect fire attacks on targets detected by AH not possible.	Difficult, if not impossible to check fire mortar and artillery mission being fired close to friendly troops.	Unsatisfactory. Suboptimizes a single attack system without regard to target priority or combined effects of close support systems.	None.

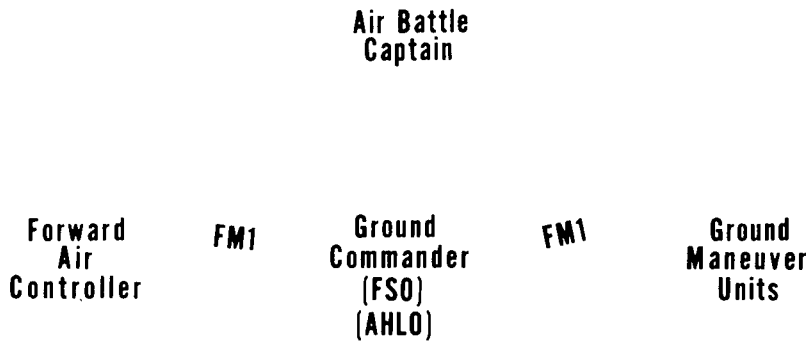
APPENDIX C

COMMUNICATIONS

The ground maneuver unit commander is responsible for conducting the battle in his operational area. His primary means of communication with the JAAT is by radio through the air battle captain (ABC). The ABC has communications with all elements of the JAAT through these two nets:

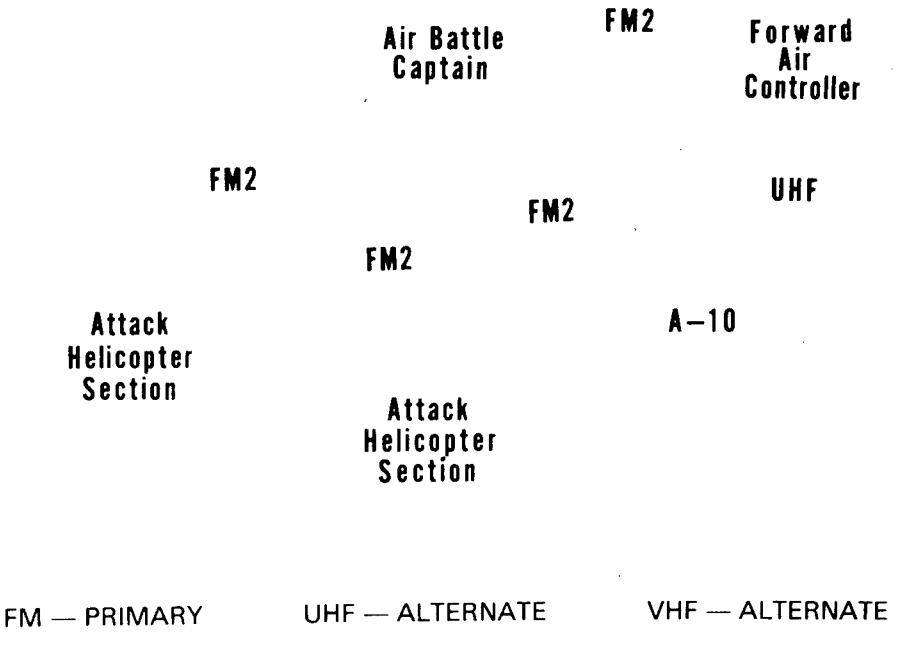
- GROUND-AIR COMMUNICATIONS (FM 1)

Stations include the ground maneuver commander, major subordinate maneuver units, ABC, FAC, and FSO. The ABC uses this net to coordinate the scheme of maneuver units and to keep the ground commander informed on the situation in the battle area. This net may operate in a secure mode. Normally, a liaison officer from the supporting attack helicopter unit will maintain radio communications between the ground unit commander and the ABC. The ground unit commander has the option to conduct JAAT operations through the ABC over his command net or through the attack helicopter liaison officer (AHLO).

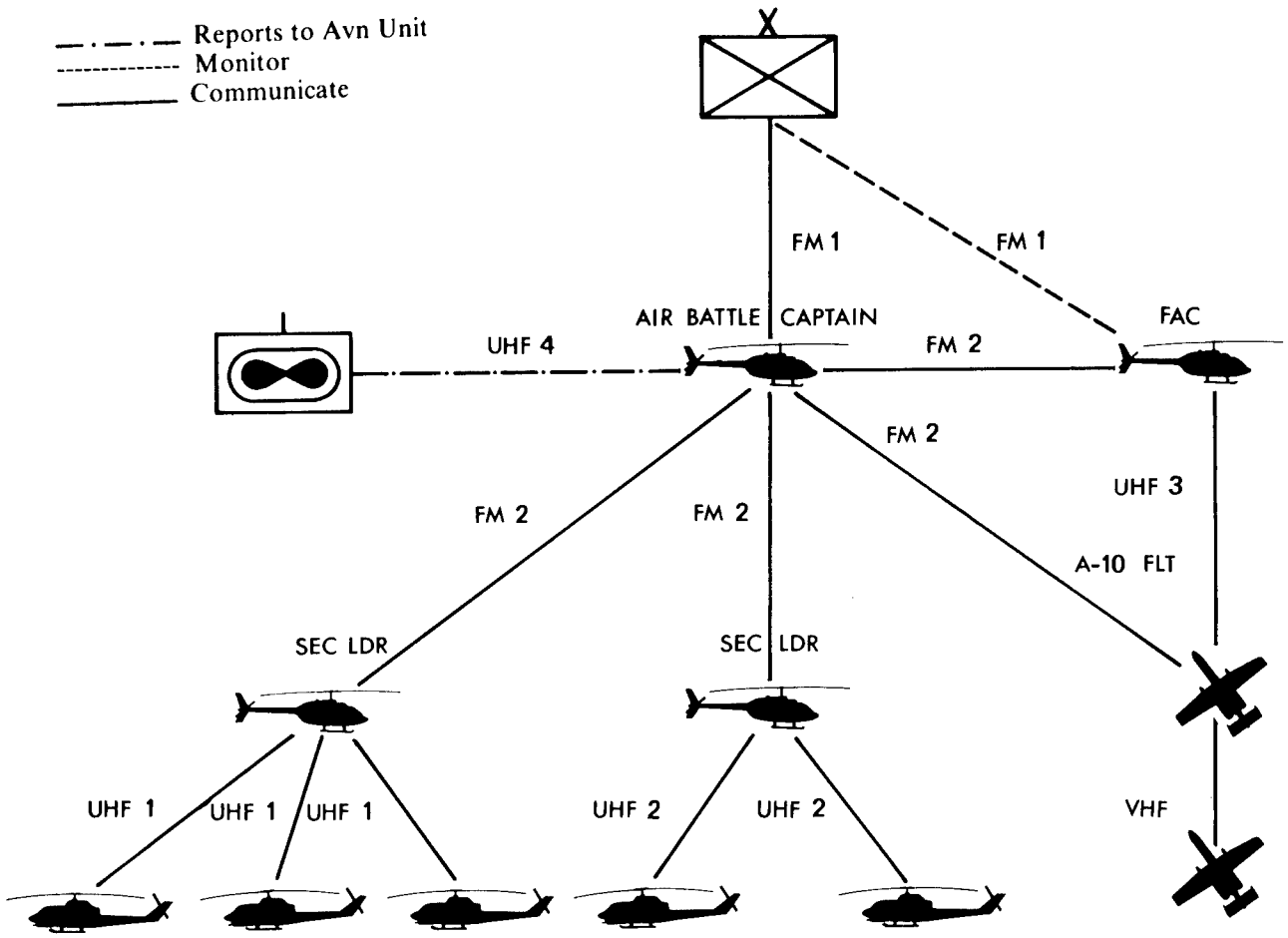


- JAAT AIR-TO-AIR COMMUNICATIONS NET (FM 2)

This net is the primary means by which the ABC coordinates all air assets of the JAAT operation. The primary elements on this net will be the two helicopter sections of the attack helicopter team, the FAC, and the A-10 flight lead or leads. UHF is used primarily for internal communications within attack helicopter sections. If HAVE-QUICK becomes available on Army helicopters, the air-to-air net should be changed to a UHF primary. UHF/VHF will normally be used for CAS flight internal communication and may be used as an alternate JAAT air-to-air net.



A functional communications plan for a JAAT operation would be similar to the one listed below. Adjustments based on enemy jamming, lack of aircraft radios, or lack of team members (*i.e.*, FAC) would have to be made on a case-by-case basis. When possible all aircraft will monitor a common frequency for emergency calls.



AUTHENTICATION

Army and Air Force members of the JAAT must have a common authentication system to validate identification upon initial contact and to verify mission changes.

Ground liaison officers (GLO) attached to Air Force elements can often coordinate with Army elements for CEOI extracts. In many cases this coordination is not possible because of distances and the number of units involved.

An alternative method is to disseminate the Air Force authenticator system used in the tactical air request net to all Army attack helicopter/air cavalry units. These authenticators are already issued to Air Force tactical air control parties and can be obtained through Army G2/S2 publication accounts.

SECTION I. ABBREVIATIONS

ABC — Air Battle Captain: Designated by the attack helicopter company commander for each team. The ABC normally directs employment of his team from a scout helicopter. He is the ground commander's subordinate for directing the attack helicopter team and for coordination of attack helicopters and close air support aircraft when working the same target array.

ADA — Air Defense Artillery: High-angle weapon systems specifically designed for the air defense role. Weapons and equipment for actively combating air targets from the ground.

AH — Attack Helicopter: A tandem seat, two place helicopter armed with TOW missiles, 2.75-inch rockets, and a turret-mounted 20-mm cannon or a turret with a 7.62-mm mini-gun and 40-mm grenade launcher. It has three radios: UHF, VHF, and FM.

AHLO — Attack Helicopter Liaison Officer: A US Army officer from a US Army attack helicopter unit who establishes liaison with the US Army ground maneuver force headquarters when a command relationship between the two units has been established, or is anticipated.

ALO — Air Liaison Officer: The senior Air Force officer at each tactial air control party (TACP). He advises the Army commander on all aspects of the employment of tactical air power to include tactical airlift, tactical reconnaissance, battlefield interdiction, and close air support. He serves as the focal point for Air Force coordination in joint air/ground operations and assists in the planning for tactical air support of ground operations. The ALO supervises the activities of TACP personnel and is responsible for all subordinate TACPs.

ARTEP — Army Training and Evaluation Program: A Department of the Army publication providing guidance for training and evaluating units. It provides a list of tasks, ranked according to criticality, which must be accomplished by each element of the unit in order for it to accomplish its table(s) of organization and equipment mission. In addition to the tasks, it lists corresponding training objectives, references, conditions for testing, and standards which must be attained.

ASOC — Air Support Operations Center: The tactical air control system element subordinate to the TACC, designed to plan, coordinate, and direct tactical air operations in support of ground forces. The ASOC is collocated with the senior Army unit tactical operations center of the supported ground force, normally at corps level.

CAS — Close Air Support: Air action against hostile targets which are close to friendly forces and require detailed integration of each air mission with the fire and movement of those forces. Any USAF fighter or attack aircraft may be tasked to provide CAS.

CEOI — Communications-Electronics Operation Instructions: Instructions for the development, installation, operation, and maintenance of electronics and electro-mechanical systems associated with the collecting, transmitting, storing, processing, recording, and displaying of data and information associated with all forms of military communications excluding the responsibility for information and data systems and equipment which has been otherwise assigned.

CP — Contact Point: A point where CAS aircraft and a FAC establish radio contact.

DPICM — Dual Purpose Improved Conventional Munitions: A field artillery round that is designed to carry a specific quantity of submunition. The submunitions are designed to penetrate light armor and provide fragmentation-blast effects.

FAAO — Field Artillery Aerial Observer: An individual whose primary mission is to observe or take photographs from an aircraft in order to adjust indirect fires or obtain military information.

FAC — Forward Air Controller: A tactical fighter-qualified US Air Force pilot assigned to a maneuver battalion TACP. He operates from a position near the FLOT and controls USAF aircraft engaged in close air support of ground forces.

FARP — Forward Arming and Refueling Point: Temporary facility organized, equipped, and deployed by an aviation unit commander, and located closer to the area of operation than the aviation unit's combat service area, to provide fuel and ammunition necessary for the employment of helicopters in combat.

FEBA — Forward Edge of the Battle Area: The forward limit of the main battle area.

FFAR — Folding Fin Aerial Rocket: The 2.75-inch fin stabilized rocket used by the AH-1 Attack Helicopter for direct or indirect fires.

FIST — Fire Support Team: Coordinates fire suppport for US Army tank, mechanized infantry, and infantry companies and cavalry troops. The FIST chief is normally a US Army field artillery lieutenant. The FIST has five major duties:

1. Plan fires.
2. Locate targets; request and adjust fires.
3. Coordinate fire support.
4. Report battlefield information.
5. Provide target location information to CAS aircraft when a FAC is not available.

FLOT — Forward Line of Own Troops: A line which indicates the most forward position of friendly forces in any kind of military operation at a specific time.

FM — Frequency Modulated.

FSCOORD — Fire Support Coordinator: The senior field artillery officer at each echelon above platoon level who serves as the principle advisor to the commander for the coordination of all fire support within the unit's area of responsibility.

FSE — Fire Support Elements: Found in US Army maneuver battalions, cavalry squadrons, regiments, brigades, divisions, and corps. Fire suppport planning and coordination is done in the fire support element.

FSO — Fire Support Officer: A full-time coordinator of all fire support and the field artillery commander's representative at the supported headquarters.

GLO — Ground Liaison Officer: An officer trained in offensive air support activities. Ground liaison officers are normally organized into parties under the control of the appropriate army commander to provide liaison with air force and naval units engaged in training and combat operations.

G/VLLD — Ground/Vehicular Laser Locator Designator: Provides distance, direction, and vertical angle as well as laser illumination termed "designation" for Army, Air Force, and Navy guided munitions.

IP — Initial Point: A point from which the final attack run-in is made.

JAAT — Joint Air Attack Team: A combination of US Army attack helicopters and US Air Force close air support aircraft (normally A-10s) operating together to locate and attack high priority targets.

METT-T — Mission, enemy, troops available, terrain, and the time available.

OH — Observation Helicopter: A four place, light observation helicopter used in the aeroscout role. The normal crew consists of a pilot and an aerial observer, co-pilot, or a forward air controller (FAC). It has four radios: UHF, VHF, and two FMs.

OP — Observation Post: A position from which observations are made and/or fires are adjusted.

OPCON — Operational Control: Authority delegated to a commander to direct forces provided him so that he may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned; and to retrain or assign tactical control of those units. OPCON does not include administrative or logistic responsibility, discipline, internal organization, or unit training.

OPFOR — Opposing Forces: An organized force created by and from US Army units to portray a unit of a potential adversary armed force.

RACO — Rear Area Combat Operations: Operations undertaken in the rear area to protect units, lines of communications, installations, and facilities from enemy attack or sabotage, to limit damage, and to re-establish support capabilities.

RTB — Return to Base: A term used to indicate the departure of the Air Force flight from a given point, i.e., the JAAT target area, to a servicing airfield.

SOP — Standing Operating Procedure: Procedures prescribed by the commander which cover those normal operational matters that are routine or that lend themselves to definite standardized procedures.

SAM — Surface to Air Missile: A guided missile launched from land or sea for the purpose of destroying fixed or rotary wing aerial vehicles.

SEAD — Suppression of Enemy Air Defenses: A term that refers to any action which destroys, degrades or obscures enemy surface air defenses for a period of time to enhance the effectiveness of friendly air operations.

TACC — Tactical Air Control Center: The senior air operations element for the air component commander controlling and coordinating missions within a designated theater of operations.

TACCS — Tactical Air Command and Control Specialist: An Air Force enlisted member assigned to a tactical air control party for the purpose of operating and maintaining the unit equipment and assisting the forward air controller. (This was previously called ROMAD.)

TAC (A) — Tactical Air Coordinator (Airborne): Operates from a fixed wing aircraft (normally an O-2, OA-37, or OV-10) to coordinate the employment of in-bound CAS flights. He provides CAS pilots battle information, direction to the target area and, as necessary, radio relay from the FAC and/or from the ground force commander.

TACP — Tactical Air Control Party: An Air Force team consisting of ALOs, FACs, TACCSs, airborne and ground vehicles, and communications equipment required to obtain, coordinate, and control tactical air support for ground forces. A TACP is attached to each division, brigade, and battalion to facilitate coordination of tactical air support operations. The TACP operates and maintains the Air Force air request net.

TACAN — Tactical Air Navigation: A radio location system comprised of a transmitter and receiver(s) that operates in the VHF radio spectrum. The receiver provides slant, range, and relative bearing to the selected transmitter.

TOT — Time On Target: The time an aircraft is scheduled to attack a target; the time an aircraft actually attacks a target.

UHF — Ultra High Frequency.

UTM — Universal Transverse Mercator: The grid coordinate reference system commonly used by ground forces for identifying a location on the earth's surface.

VHF — Very High Frequency.

VT — Variable Time: A warhead fuze which detonates within a designated proximity of the target to achieve a desired effect.

Section II. TERMS

A-10: USAF close air support aircraft commonly referred to as a "WARTHOG."

AH-1S: US Army attack helicopter commonly referred to as a "COBRA" or "SNAKE."

Attack Helicopter Team: A combination of US Army attack helicopters and scout helicopters led by an air battle captain.

Bandit: An enemy aircraft.

Bingo: A term used to indicate minimum fuel for safe return to base or a designated alternate (airfield, target, etc.)

Blind: A term meaning "you/friendly not in sight."

CAS Sector: Airspace in the target area defined by geographic landmarks, assigned to a single or several CAS aircraft (normally A-10s) by a flight leader.

Cobra: A common term referring to the AH-1S Attack Helicopter.

Flight: A formation of normally two to four US Air Force aircraft.

Have-Quick: An electronic counter-countermeasure modification to selected radios, which provides a frequency hopping capability.

Indirect Fires: Systems, i.e., field artillery, mortar, and naval gunfire, delivered at a target which cannot be seen by the gunner.

Jinking: A sudden, repetitive, three-dimensional change in the attitude and direction of an aircraft normally employed to degrade air defense engagement capabilities.

No Joy: A term meaning "enemy/target not in sight."

Pave Penny: A passive laser energy detection system used by the Air Force pilot as an aid in target location and identification.

Reattack: Another attack made upon the same target array without returning to the IP.

Scout: A common term referring to the OH-58 light observation helicopter.

Snake: common term referring to the AH-1S Attack Helicopter.

Tally-ho (tally): A term meaning "enemy/target in sight."

Trail Attack (formerly B'NAI): A type of sequential attack. Timing between aircraft is the key to a successful trail attack. The lead aircraft unmasks, while the second aircraft remains masked to scan the horizon for possible Threat fire. A 20-30 second interval is required between the aircraft depending on the type ordnance delivered.

VIC (V): A formation of three CAS aircraft shaped like an inverted V (see fig on page 16).

Vinson: The current series of secure voice equipment used in conjunction with FM radio.

Visual: A term meaning "you/friendly in sight."

Warthog: A common term referring to the US Air Force's A-10.

Winchester: A term meaning out of ordnance. It may refer to a particular type of ordnance (i.e., Winchester 30-mm).

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